Archived: Monday, October 28, 2019 11:17:14 AM
From: Stashwick, Sasha
Sent: Friday, September 27, 2019 6:39:16 PM
To: james.white@deq.virginia.gov
Subject: NRDC Comments on Enviva Southampton
Importance: Normal
Attachments:
NRDC Enviva Southampton Comments_Sept 27 2019.pdf;

James,

Attached are comments from the Natural Resources Defense Council on the draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton, LLC.

Please don't hesitate to contact me if you have any questions.

Thank you,

SASHA STASHWICK
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NRDC Enviva Southampton Comments_Sept 27 2019.pdf

September 27, 2019

By Electronic Mail to:
Mr. James White
VA DEQ Tidewater Regional Office
5636 Southern Blvd.,
Virginia Beach, VA 23462
james.white@deq.virginia.gov

RE: Comments on the Draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton (Registration No. 61653).

Dear Mr. White:

The Natural Resources Defense Council (NRDC) submits these comments on behalf of our over 12,000 Virginia members on the draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton, LLC ("Enviva Southampton" or "the facility"), a wood pellet manufacturing facility located at 26570 Rose Valley Road, Franklin, Virginia. The draft permit would authorize a modification of the facility, with an increase in production from 535,260 tons per year (tpy) to 781,255 tpy, and an increase in the allowable share of softwood from 10% to 80%. The permit also includes the installation of new pollution controls for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) relating to DEQ's regulation of existing operations.

We commend DEQ for requiring that Enviva install these much-needed and long overdue VOC and HAP controls at Enviva Southampton in the draft permit. Nonetheless, the facility's expansion also includes a doubling of nitrogen oxide (NOx) and particulate matter (PM) emissions, a tripling of carbon monoxide (CO) emissions and, critically, the draft permit fails to restrict potential NOx emissions to below the major source prevention of significant deterioration (PSD) threshold. Additionally, the draft permit appears to authorize the facility to continue emitting HAPs at a rate that exceeds Clean Air Act section 112's major source threshold without complying with major source maximum achievable control technology (MACT) standards for at least another year, in contravention of the Clean Air Act.

Due to its serious shortcomings in protecting the public from these harms, summarized below, NRDC urges DEQ to deny Enviva's draft permit in its current form. The draft permit must be revised to address the issues raised by these comments prior to issuance.

In this letter, we underscore and elaborate upon the earlier letters you received from our 1,110 Virginia members and activists who raised their concerns about the public health impacts of the facility, including dust and toxic air pollution that affects local communities These concerns are reinforced by the technical arguments set forth in detail in comments submitted to you by the Environmental Integrity Project (EIP) and the Southern Environmental Law Center (SELC) on behalf of ourselves and six additional public interest organizations (herein EIP/SELC Comments). Those comments detail a) how the facility's NOx potential to emit (PTE) exceeds the major source threshold for the PSD program (Section I, Subsection A); b) how the draft permit's production and emission limits (both short term and annual) fail to ensure compliance with permit limits because they are insufficient to restrict Enviva Southampton's NOx PTE, are unenforceable, or both (Section I, Subsection B1-B3); and c) how the facility will be allowed to continue emitting HAPs at rates that exceed the currently permitted limits for up to one year until controls are installed (Section IV, Subsections A-B).

To protect the public from these harms, the permit must be revised to, at minimum, correct these critical deficiencies prior to reissuance:

1. **Any final permit, if issued, must limit operations and parameters in a way that actually restrict NOx emissions and implement corresponding monitoring, recordkeeping, and reporting to make the limit enforceable, as detailed in the EIP/SELC Comments. This can be a limit on heat input, fuel usage, or hours of operations to restrict PTE.**

   As detailed in the EIP/SELC Comments, the two furnaces at Enviva Southampton currently have a combined potential heat input rating of 3,112,428 MMBtu/year and contribute to a PTE of 268 tpy if operated at this rate, exceeding the major source threshold of 250 tpy. To restrict PTE to below the major source threshold, the two furnaces must be limited to a maximum combined heat input of 2,850,000 MMBtu/year. However, to ensure compliance with the emission limit of 145.5 tpy, the permit must restrict heat input to 1,950,000 MMBtu/year.

   NRDC echoes the EIP/SELC comments in noting that the Enviva Cottondale plant in Florida is currently subject to a limit on heat input for PTE purposes. Likewise, a similar condition applies to the Drax Amite BioEnergy wood pellet plant in Mississippi. Alternatively, DEQ could craft limits on the total fuel combusted in the two furnaces, or potentially the hours of operations.

2. **In any final permit, if issued, DEQ must add conditions that restrict the facility's HAP emissions to below the major source thresholds until such time as the facility's new pollution controls are operational.**

   As noted above, we appreciate that DEQ has required Enviva to install much-needed pollution control technology to control Enviva Southampton's VOC and air toxics emissions, and that the agency has required the company to adhere to a strict, enforceable construction schedule. However, pursuant to the draft permit, these controls must be operational within one year after the final permit is issued. DEQ is aware of credible evidence that the facility

has been exceeding legal limits for air toxics since it began operating.[1] In such a case, it is paramount that DEQ does everything within its authority to ensure that the public is protected from these harmful emissions immediately, as discussed in detail in the EIP/SELC Comments.

3. **Any final permit, if issued, must contain more stringent stack testing requirements.**

   NRDC acknowledges and appreciates that the draft permit includes more testing requirements than previously required at Enviva Southampton. However, as detailed in the EIP/SELC Comments, emissions at wood pellet plants are highly variable and there is a dearth of data currently available, making more frequent testing especially necessary. The draft permit only requires stack tests once every five years, which is inadequate to ensure the facility complies with emission limits under PSD. This is especially vital for NOx emissions because Enviva calculates the facility will have a PTE of 247 tpy, just shy of the 250 tpy major source threshold. Moreover, Enviva estimated combined emissions that are significantly higher than the limits DEQ has chosen to implement.

   North Carolina DEQ has recently implemented annual stack tests at three recently-permitted Enviva plants. We see no reason to require less stringent testing at Enviva Southampton, and it appears that the agency has not provided a rationale for less frequent stack testing.

4. **In any final permit, if issued, DEQ must explain how Enviva will demonstrate compliance with permit limits at Enviva Southampton. To assure compliance with the emission limits, the permit must require Enviva to monitor and account for emissions from all units and must include the emission factors and equations utilized to do so.**

   The draft permit implements both short-term emission limits (lb/hr), as well as long-term limits (tons/year). For several pollutants, the short and long-term limits are essentially the same (i.e. the hourly limit multiplied by 8,760 hours equates to the annual limit), but for NOx and CO, the short-term limits do not equate with the long-term limit. It is not clear how stack testing will demonstrate compliance with these limits. For instance, if the stack test produces a NOx emission rate of 22 lb/hr for each furnace, the furnaces are in compliance with the short-term limit but likely exceed the annual limit depending on how often the dryers have operated. DEQ must clarify that, in such a scenario, compliance with the short-term limits is not a defense to exceedances of the long-term limit.

5. **In any final permit, if issued, DEQ must include heightened requirements tailored to Enviva Southampton's operations and the dust concerns expressed by neighboring residents in order to prevent fugitive emissions from becoming airborne, as detailed in the EIP/SELC Comments.**

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[1] Credible evidence that Enviva Southampton has likely been emitting HAPs and other air toxics in excess of the legal limits was discussed fully in a letter submitted to DEQ by EIP, SELC, NRDC and other organizations on November 5, 2018. The EIP/SELC Comments on this draft permit include additional detailed information about these violations in Section II.

As DEQ heard at its August 6, 2019 public information meeting for the Enviva Southampton modification, neighbors of the facility expressed frustration that dust is still coating their property years after first raising the issue with the company. Exposure to fugitive dust (i.e. particulate matter pollution) is linked to numerous health harms, primarily involving damage to the lungs and respiratory system due to inhalation, as detailed in the EIP/SELC Comments and the attachments included therein.

Because the draft permit authorizes Enviva Southampton to increase its wood pellet production, the facility will generate substantially more fugitive dust than was originally projected. Although the draft permit does include fugitive dust requirements tailored to wood pellet operations, several of the conditions have already been in place for years and have failed to resolve the fugitive dust issues associated with Enviva's operations, as expressed by those living in close proximity to the Southampton facility. The need for DEQ to be proactive in requiring additional fugitive dust controls for this facility is especially acute due to the fact that, as discussed in the EIP/SELC Comments (Section VI), this facility will impact the health and well-being of communities that are already plagued by numerous polluting facilities.

6. **In any final permit, if issued, DEQ must supplement operational and emission limits applicable prior to operation of the new VOC controls. DEQ must incorporate the existing emission limits into the draft permit to apply during the interim period before the controls are operational.**

   Unfortunately, the conditions governing the operations of Enviva Southampton between the issuance of this permit and the installation of controls are flawed in several regards. As discussed in the EIP/SELC Comments (Section VII, Subsection A-B), the operational and emission limits do not actually restrict facility-wide PTE for any pollutant because they do not apply to the entire facility's emissions. Specifically, they limit operations only in terms of the wood dryers on site and do not preclude Enviva from processing greater amounts of wood or higher rates of softwood in the post-dryer units immediately upon issuance of the final permit—e.g. by supplementing wood dried on site at its Southampton facility with purchased, pre-dried shavings, which the company commonly does at its wood pellet mills in North Carolina and Florida. Secondly, the draft permit's new emission limits appear to apply only after the installation of controls, leaving the facility without any PTE limits for up to a year after permit issuance (or longer with DEQ approval).

   DEQ must either verify that Enviva Southampton is not capable of processing pre-dried shavings, or implement limits restricting throughput and softwood content of not only the dryers, but also the post-dryer units as well. Additionally, by exempting Enviva from any emission limits for up to a year, the permit fails to restrict PTE for numerous pollutants. DEQ must remedy this by, at a minimum, incorporating the existing emission limits into the draft permit to apply during the interim period before the controls are operational.

7. **In any final permit, if issued, DEQ should implement reporting requirements, without which members of the public have no way to access information about the Southampton facility's emissions.**

While the draft permit requires Enviva to record many crucial datapoints directly related to emissions, such as pellet production, softwood usage, control device parameters, and emissions calculations, it does not require Enviva to report any of this data to DEQ. While we acknowledge no regulation mandates that the permit contain such reporting conditions currently, Enviva Southampton's eventual Title V permit will require such reporting. More significantly, such reporting is crucial to effective public oversight and the lack of access to these records seriously hinders citizen enforcement—a key component of the Clean Air Act. EIP has documented numerous, serious exceedances across this industry in recent years, meaning public oversight is especially important.

Here again we point to North Carolina and other states, which have implemented similar reporting requirements for Enviva and other pellet plants prior to Tile V issuance. We see no reason why Enviva Southampton should not meet the same requirement in Virginia.

For the reasons set out above, the draft permit for Enviva Southampton is deeply flawed and must be denied or, in the alternative, must be revised prior to issuance to address the issues raised here and in the EIP/SELC Comments. DEQ must ensure the Southampton facility will not exceed the major source PSD threshold without an appropriate permit. DEQ must also implement limits that restrict HAP emissions to legal levels prior to the installation of controls, and address the other issues raised above.

Respectfully submitted,

Sasha Stashwick
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Archived: Monday, October 28, 2019 11:17:15 AM
From: Dogwood Alliance
Sent: Friday, September 27, 2019 3:47:51 PM
To: James White
Subject: Registration Number 61653 - Protect our Forests and our Health
Importance: Normal

Sep 27, 2019

James White

Dear Permitting Officer, White,

I am writing to urge you to deny Enviva's proposed expansion. I oppose any expansion in production at the Enviva Southampton County wood pellet facility. Additionally, I call on VA DEQ to decouple Enviva's permit for expansion with their permit for air pollution controls. Enviva must be required to install air pollution controls that their competitors in other states have used for years. The public should have the ability to comment on these two separate issues independent of each other.

I am concerned with the expansion of the wood pellet industry, led by Enviva, and the industry's impact on Virginia's forests, communities, and the climate.

The urgency of the climate crisis demands that we dramatically scale up forest protection. We cannot afford the increased logging and degradation of our forests. According to the Intergovernmental Panel on Climate Change, to meet our climate goals we must dramatically scale up forest protection, conservation, and restoration. Yet Enviva is driving the destruction and degradation of tens of thousands of acres of Southern forests per year. An increasing body of scientific evidence shows that burning trees for utility-scale electricity releases more greenhouse gas emissions than fossil fuels do. If the Southampton County increase goes through, it will increase logging to 19,000 acres per year, and carbon emissions to 1,430,757 tpy - the equivalence of 303,770 additional cars on the road per year.

Enviva has been documented numerous times logging in the Roanoke River Basin, a river that has already flooded Southampton County numerous times. As our coastal communities prepare for more frequent and intense hurricanes, it is more important than ever to invest in nature to protect communities from the damage wrought by these intense storms. Natural forests and wetlands absorb floodwaters and slow them down, buffering communities from flooding and reducing costly property damage.

Furthermore, this expansion request comes amidst revelations of years-long violations of the Clean Air Act, and attempts by the industry to cover this up. A recent report by Environmental Integrity Project shows a shocking pattern of air quality violations or

noncompliance at almost all wood pellet facilities, with Virginia's Enviva facility being amongst the worst. For years, Enviva has been spewing hazardous pollutants into the air, emissions that have been linked to respiratory illness, heart disease, and cancer. Enviva consistently claims the health of communities living near their facilities is too expensive to protect. Enviva recently agreed to install proper air pollution controls at the Hamlet and Sampson County plants only after being dragged through court and threatened with an enforcement action.

Time and again, Enviva has misled the public, government, and investors on their emissions and sourcing practices. The company's past actions and missteps make it all the more imperative that it is strongly scrutinized at every step of the way.

I urge you to deny this Air Quality permit, Registration Number 61653, and any other proposals made by Enviva to expand operations. Additionally, I call on VA DEQ to decouple Enviva's permit for expansion with their permit for air pollution controls. Thank you for the opportunity to comment on this permit.

Sincerely,

phoebe hughes
195 swinnow road
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phoebehughes195@yahoo.co.uk

Archived: Monday, October 28, 2019 11:17:16 AM
From: Patrick Anderson
Sent: Friday, September 27, 2019 3:45:41 PM
To: James White
Cc: Heather Hillaker; Keri N Powell
Subject: Public Comments on Enviva Southampton Permit
Importance: Normal
Attachments:
Enviva Southampton Comments Final.pdf ;Attachments A through L.pdf ;

Mr. White,
Please find attached public comments on the draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton (Registration No. 61653), submitted on behalf of Environmental Integrity Project, Southern Environmental Law Center, Dogwood Alliance, the Virginia Chapter of the Sierra Club, Coastal Plain Conservation Group, the Rachel Carson Council, Partnership for Policy Integrity, Natural Resources Defense Council, and Our Children's Earth. Please also find attached Comment Attachments A through L.

If you would, please confirm you have received these comments and attachments.

Thank you,
Patrick

Patrick Anderson
Of counsel for Environmental Integrity Project
Associate Attorney
Powell Environmental Law
719 963 4072
315 W. Ponce de Leon Ave, Suite 842
Decatur, GA 30030

Enviva Southampton Comments Final.pdf

September 27, 2019

By Electronic Mail to:
Mr. James White
VA DEQ Tidewater Regional Office
5636 Southern Blvd.,
Virginia Beach, VA 23462
james.white@deq.virginia.gov

RE: Comments on the Draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton (Registration No. 61653).

Dear Mr. White:

On behalf of Dogwood Alliance, the Virginia Chapter of the Sierra Club, Coastal Plain Conservation Group, the Rachel Carson Council, Partnership for Policy Integrity, Natural Resources Defense Council, Our Children's Earth, and themselves, Environmental Integrity Project and the Southern Environmental Law Center hereby submit these comments on the draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton, LLC ("Enviva Southampton" or "the facility"), a wood pellet manufacturing facility located at 26570 Rose Valley Road, Franklin, Virginia. The draft permit would authorize a modification of the facility, with an increase in production from 535,260 tons per year (tpy) to 781,255 tpy, and an increase in the allowable amount of softwood percentage from 10% softwood to 80% softwood. The permit also includes the installation of new pollution controls for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs).

While the new VOC and HAP controls are welcomed and long overdue, the expansion also includes a doubling of nitrogen oxide (NOx) and particulate matter (PM) emissions, and a tripling of carbon monoxide (CO) emissions, and critically, the permit fails to restrict potential NOx emissions to below the major source prevention of significant deterioration (PSD) threshold. Additionally, the permit appears to authorize the facility to continue emitting HAPs at a rate that exceeds Clean Air Act section 112's major source threshold without complying with major source maximum achievable control technology (MACT) standards for at least another year, in contravention of the Clean Air Act. The permit must be revised to address these issues prior to issuance.

I. The Draft Permit Fails to Restrict the Facility's Potential NOx Emissions to Below the Major Source Threshold for the PSD Program and Fails to Ensure Compliance with Permit Limits.

Enviva currently operates one 175.3 MMBtu/hr wood fired furnace and plans to install a second furnace with a heat input rating of 180 MMBtu/hr, along with numerous other new combustion units. Each of these units is a source of NOx emissions. The draft permit, in turn, implements a limit on the total NOx emissions for the two furnaces of 145.5 tpy, along with unit-specific NOx limits on other sources, which, in total, restrict facility-wide NOx emissions to 177.5 tpy.[1] We support these limits as necessary aspects of restricting the facility's potential to emit (PTE) NOx to below the major source PSD threshold of 250 tpy. As currently drafted, however, the permit does not adequately restrict NOx PTE and the emission limits and operating limits are unenforceable as a practical matter. As such, the facility's PTE for NOx emissions exceeds the 250 tpy major source threshold.

A. Enviva Southampton's PTE for NOx Exceeds 250 tpy.

The emission rates in the table below are taken directly from Enviva's application addendum,[2] and show that, when operated at full capacity, the facility's PTE exceeds 250 tpy:

Enviva's Application Addendum Shows NOx PTE Exceeds 250 tpy	
Unit	**Annual Emissions (tpy)**
Rotary Dryer 1 (RTO-1)	110.2
Rotary Dryer 2 (RTO-2)	121.5
Pellet Presses and Coolers (RCO-1)	13.2
Dry Hammermills (RCO-2)	12.66
All other sources	10.57
Sum (Facility-Wide Total):	**268.13**

Both Enviva and DEQ calculate PTE differently, and each reach lower numbers than the sum of each unit's maximum emissions, as discussed below. The discrepancy appears to be due to Enviva and DEQ's assumption that the facility's two dryers, or more importantly, its two furnaces, will not operate at full capacity simultaneously for any 12-month period. For instance, when Enviva calculates facility-wide emissions, Enviva lists a combined emission rate for the two dryers of 212.18 tpy, yet Enviva also lists the rates for each individual dryer as shown in the table above, which sum to 231.7 tpy.[3] In other words, Enviva apparently assumes that in practice,

[1] Enviva Southampton Draft Permit at Conditions 41- 48, 50-52.
[2] Enviva, Addendum to Application for Modification of Stationary Source Permit for Increased Softwood Utilization and Installation of Emission Controls, Enviva Pellets Southampton (Mar. 22, 2019) (hereinafter, Southampton Application Addendum).
[3] *Id.* at Appendix 1, Tables C-1, C-3, C-10.

it will operate one or both of the dryers at a rate roughly 8.5% lower than maximum capacity. This assumption may be a reasonable prediction of actual operations, but it is an assumption that has not been incorporated into the permit as an enforceable condition, and therefore must be ignored when calculating PTE.

A facility's PTE is defined as the "*maximum capacity* of a stationary source to emit a pollutant under its physical and operational design." 40 C.F.R. § 52.21(B)(4) (emphasis added). As courts have explained, "PTE is not to be confused with actual emissions, which may be significantly lower."[4] Stated more plainly, PTE is a "worst case emissions calculation."[5] In this instance, the "worst case" calculation must include a scenario where both furnaces operate at their maximum rated capacity simultaneously for 12-months, and doing so results in a PTE that exceeds the major source PSD threshold.

Finally, there is a disparity between how Enviva calculates PTE and how DEQ calculates PTE. In its March 22, 2019, application addendum, Enviva estimates a facility-wide PTE for NOx of 247 tpy after the modification.[6] DEQ's draft engineering analysis, meanwhile, lists the post-expansion PTE as 177.5 tpy, apparently after applying the emission limits in the permit.[7] The fact that Enviva calculates its potential NOx emissions considerably higher than what DEQ is authorizing the facility to emit highlights the need for accurate production/operational restrictions and effective monitoring, recordkeeping, and reporting requirements sufficient to ensure compliance with the permit's NOx limits.

B. The Draft Permit's Production and Emission Limits Are Not Enforceable Limits Sufficient to Restrict PTE for NOx.

As EPA has consistently explained, a limit intended to restrict PTE "can be relied upon . . . only if it is legally and practicably enforceable."[8] EPA has further explained practical enforceability as such: "[i]n order to be considered practically enforceable, an emissions limit must be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold."[9] Moreover, to appropriately limit PTE, a permit "must contain a production or operational limitation *in addition to* the emission limitation."[10] Here, none of the emission limitations nor the production limit, together or individually, adequately restrict PTE for NOx emissions.

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[4] *Voigt v. Coyote Creek Mining Co., LLC*, No. 1:15-cv-00109, 2018 U.S. Dist. LEXIS 111913, at *84 (D.N.D. July 3, 2018).
[5] *In re Peabody Western Coal Co.*, 12 E.A.D. 22 (E.P.A. Feb. 18, 2005) (quoting EPA Region IX Response to Comments (Sep. 23, 2004)).
[6] Southampton Application Addendum, *supra* note 2, at Appendix 1, Table C-1.
[7] Virginia DEQ, Tidewater Regional Office, Draft Engineering Analysis for Enviva Pellets Southampton, at 9 (released for public comment Aug. 11, 2019) (hereinafter, Draft Engineering Analysis). It is unclear from the draft engineering analysis exactly how DEQ calculated the facility's PTE for NOx.
[8] *In the Matter of Kentucky Syngas, LLC*, Order on Petition No. IV-2010-9, at 30 (E.P.A. June 22, 2013), https://www.epa.gov/sites/production/files/2015-08/documents/kentuckysyngas_response2010.pdf.
[9] *In the Matter of Orange Recycling & Ethanol Prod. Facility, Pencor-Masada Oxynol, llc.*, Order on Petition No. II-2001-05, at 7 (E.P.A. Apr. 8, 2002), https://www.epa.gov/sites/production/files/2015-08/documents/masada-2_decision2001.pdf.
[10] U.S. EPA, Guidance Limiting Potential to Emit in New Source Permitting, at 9 (June 13, 1989) [hereinafter, EPA NSR Guidance].

The draft permit includes several limits that relate to NOx emissions: short-term emission limits expressed in pounds per hour, annual rolling emission limits expressed as tons per year, and a limit on the two dryers restricting throughput to no more than 781,255 tpy.[11] As shown above, the facility's NOx PTE will exceed the major source threshold unless the facility is subject to practically enforceable PTE limits. While the proposed operating and emission limits are necessary aspects of limiting PTE, as a whole the permit fails to sufficiently restrict PTE to avoid PSD, as explained below.

1. Production Limit

The primary operating limit associated with NOx emissions is a condition restricting the two wood dryers to processing no more than 781,255 tpy.[12] This limit, however, is insufficient to restrict potential NOx emissions. NOx pollution is a product of combustion and is not dictated by the amount of material being dried or produced. While there is certainly a general correlation between the amount of wood processed by the dryer and NOx emissions, the fact remains that nothing requires Enviva to reduce heat input to correspond with dryer production. For instance, even if Enviva is only drying wood at a rate of 75% of the dryer's production capacity, Enviva may still run the corresponding furnace at greater than 75% heat input capacity for product quality purposes or some other reason, and therefore emit NOx at rates not corresponding to material throughput.

Although Enviva likely will not run the furnaces at full capacity if they are not drying any wood, there are other, reasonable operating scenarios that lead to NOx emissions greater than the 250 tpy PSD threshold while the facility complies with the production limit. For example, if Enviva operates each dryer at a throughput rate of 66% of the nameplate capacity (i.e. 353,272 tpy in Dryer 1 and 409,200 tpy in Dryer 2), but operated each furnace at a heat input rate of 93% of the rated capacity of the corresponding furnace (i.e. 145 MMBtu/hr and 153 MMBtu/hr), facility-wide NOx emissions will be 251 tpy.[13] Significantly, in this scenario, the facility will remain in compliance with the production limit, producing 779,800 tons over the course of the year, yet NOx emissions will exceed the major source threshold. The production limit therefore does not restrict NOx emissions to below the major source threshold.

2. Short-Term Emission Limits

The draft permit establishes several short-term NOx emissions limits, expressed in pounds per hour.[14] We generally support these hourly limits as they are consistent with EPA's guidance that PTE limits should be established on the shortest time period possible.[15] Unfortunately, without more, these limits are not enforceable and therefore cannot restrict the facility's PTE.

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[11] Southampton Draft Permit at Conditions 28, 44-48.
[12] *Id.* at Condition 28.
[13] We calculate this based on Enviva's annual emission estimates of 110.5 and 121.5 tpy for the two furnaces reduced by 7%, and add 35 tpy for the emissions from other as estimated by Enviva in its Application Addendum. *See* Southampton Application Addendum, *supra* note 2, at Appendix 1, Table C-1.
[14] Southampton Draft Permit at Conditions 41-47, 50-52.
[15] EPA NSR Guidance, *supra* note 10, at 9 ("[F]or [PTE] limitations to be enforceable as a practical matter, the time over which they extend should be as short term as possible and should generally not exceed one month.")

In order to be considered enforceable, PTE limits must be accompanied by monitoring, recordkeeping, and reporting sufficient to ensure and verify compliance at all times.[16] The Southampton draft permit, however, does not contain any monitoring related to the short-term limits. Arguably stack testing may be considered a type of "monitoring," but stack testing once every five years, as required by the draft permit, is far from sufficient to ensure compliance with hourly emission rates. Even if Enviva passes the compliance testing, nothing ensures emissions will remain below the permitted level in the five years between the stack tests. Moreover, nothing in the permit would even alert Enviva, DEQ, or the public that the facility was exceeding the permit limits. The short-term emission limits are therefore unenforceable and do not restrict PTE.

Finally, as a matter of basic arithmetic, these short-term limits do not actually restrict NOx emissions to below 250 tpy. When summed, the short-term limits equate to 254.1 tpy for NOx, meaning they do not restrict PTE to minor source levels to begin with. Moreover, the short-term limits do not apply to several sources at all—the NOx limits do not apply to the propane vaporizer, the two emergency generators, and the firewater pump, which Enviva estimates emit a combined 4.74 tpy of NOx.[17] These emissions further push the facility-wide PTE to above the PSD major-source threshold.

3. Annual Emission Limits

In addition to the hourly emission limits, the permit also implements rolling annual emission limits.[18] For instance, Condition 48 limits the combined NOx emissions from the green wood hammermills, the wood-fired furnaces, and the wood chip dryers to no more than 145.5 tpy. As noted above, longstanding EPA guidance explains that to appropriately limit PTE, a permit "must contain a production or operational limitation *in addition to* the emission limitation."[19] Here, the only operating limitations tied to the annual NOx emission limit are Conditions 32 and 37 (limiting fuel to wood residuals) and Condition 28 (restricting the throughput of the wood dryers to 781,255 tpy).

As discussed above, the dryer throughput limit is not adequate to restrict NOx emissions to below the major source threshold because dryer throughput is not adequately related to NOx emissions—i.e., Enviva could readily comply with the throughput limit while emitting NOx at rates that exceed the major source threshold. Additionally, the production limit also does not ensure compliance with the annual emission limit of 145.5 tpy on the combined furnace emissions. The tables below set out two operating scenario that are compliant with the conditions of the permit and in line with Enviva's expressed desire to have operational flexibility. As these scenarios demonstrate, Enviva Southampton can readily comply with the production limit while still exceeding the combined emission limit of 145.5 for NOx on the two dryers:

[16] *Id.* at 17. ("Specific test methods, compliance monitoring and recordkeeping and reporting requirements are necessary to make permit limitations enforceable as a practical matter.")
[17] Southampton Application Addendum, *supra* note 2, at Appendix 1, Table C-1.
[18] Southampton Draft Permit at Conditions 48, 50-52.
[19] EPA NSR Guidance, *supra* note 10, at 9 (emphasis added).

Compliance with Dryer Production Limit Does Not Ensure Compliance with NOx Limit Scenario 1						
	Dryer 1			Dryer 2		
Month	**Capacity**	**NOx (tons)**	**Throughput (ODT)**	**Capacity**	**NOx (tons)**	**Throughput (ODT)**
January	100%	9.4	45,460	100%	10.3	52,658
February	100%	8.5	41,061	100%	9.3	47,562
March	100%	9.4	45,460	100%	10.3	52,658
April	67%	4.5	21,997	100%	10.0	50,959
May	0%	0	0	100%	10.3	52,658
June	0%	0	0	100%	10.0	50,959
July	0%	0	0	100%	10.3	52,658
August	0%	0	0	100%	10.3	52,658
September	0%	0	0	100%	10.0	50,959
October	0%	0	0	100%	10.3	52,658
November	0%	0	0	100%	10.0	50,959
December	0%	0	0	100%	10.3	52,658
Totals	31%	31.7	153,978	100%	121.5	620,000
				Total Production:		781,255
				Production Limit:		781,255
				Total NOx Emissions:		**153.6**
				NOx Emission Limit:		**145.5**

Note: Emission rates based on Enviva's annual estimates of 110.2 tpy for Dryer 1 and 121.5 tpy for Dryer 2.

In the above scenario, Enviva operates the new dryer and furnace at 100% capacity for 12 months, producing 620,000 tons of pellets. Enviva operates the other dryer for roughly a third of the year, producing the remaining pellets allowed by the permit. In this scenario, the furnaces' combined NOx emissions are 153.6 tpy, exceeding the 145.5 tpy limit. In the opposite scenario, shown below, where Enviva operates the existing dryer and furnace at full capacity to produce 535,260 tpy, and uses the new furnace and dryer to produce the remaining allowable pellets, emissions are even further beyond the limit at 158.4 tpy:

Compliance with Dryer Production Limit Does Not Ensure Compliance with NOx Limit Scenario 2						
	Dryer 1			Dryer 2		
Month	**Capacity**	**NOx (tons)**	**Throughput (ODT)**	**Capacity**	**NOx (tons)**	**Throughput (ODT)**
January	100%	9.4	45,460	100%	10.3	52,658
February	100%	8.5	41,061	100%	9.3	47,562
March	100%	9.4	45,460	100%	10.3	52,658
April	100%	9.1	43,994	100%	10.0	50,959
May	100%	9.4	45,460	80%	10.3	42,159
June	100%	9.1	43,994	0%	0	0
July	100%	9.4	45,460	0%	0	0
August	100%	9.4	45,460	0%	0	0
September	100%	9.1	43,994	0%	0	0
October	100%	9.4	45,460	0%	0	0
November	100%	9.1	43,994	0%	0	0
December	100%	9.4	45,460	0%	0	0
Totals	100%	110.2	535,260	40%	48.2	245,995
				Total Production:		781,255
				Production Limit:		781,255
				Total NOx Emissions:		**158.4**
				NOx Emission Limit:		**145.5**

Note: Emission rates based on Enviva's annual estimates of 110.2 tpy for Dryer 1 and 121.5 tpy for Dryer 2.

As these two tables demonstrate, as well as the scenario described above in Part I.A of tese comments, compliance with the production limit does not ensure compliance with the combined emission limit of 145.5 tpy for the two dryers. Therefore the production limit is not adequate to convert the blanket emission limit into an enforceable PTE limit.

Moreover, as discussed above, PTE limits must be accompanied by adequate monitoring, recordkeeping, and reporting to be enforceable. While the draft permit does require monitoring the amount of fuel combusted and the hours of operation for the furnaces, this monitoring is not tied to any limit on fuel usage, and merely monitoring fuel usage is not sufficient to make an emission limit enforceable when the permit fails to contain any mechanism for converting fuel usage to an emission rate. The dryer throughput monitoring, meanwhile, is not sufficient to make the emission limit enforceable for the reasons discussed above: monitoring dryer throughput does not correspond to monitoring NOx emissions.

In sum, the annual emission limits are essentially blanket emission limits that are unenforceable as a practical matter and do not restrict NOx PTE. Finally, even if the emission limits were enforceable for individual units, the emission limits cannot serve to limit facility-wide PTE because, as with the short-term limits, they do not apply to numerous units and the permit does not contain a facility-wide emission limit. As noted above, the units not subject to emission limits have the potential to emit almost 5 tpy of NOx according to Enviva. While this rate may seem small, because Enviva estimated its facility-wide PTE at 247 tpy—just three tons shy of the

250 tpy major source PSD threshold—any emission units not subject to an emission limit could be significant in terms of terms of PSD avoidance.

C. To Restrict NOx PTE, the Permit Must Implement Limits on Heat Input, Fuel Usage, or Hours of Operations.

Currently, the two furnaces have a combined potential heat input rating of 3,112,428 MMBtu/year, and, as noted above, contribute to a PTE of 268 tpy if operated at this rate.[20] In order to restrict PTE to below the major source threshold, the two furnaces must be limited to a maximum combined heat input of 2,850,000 MMBtu/year.[21] In order to ensure compliance with the emission limit of 145.5 tpy, however, the permit needs to further restrict heat input to 1,950,000 MMBtu/year.[22]

We note that at least one other Enviva plant is currently subject to a limit on heat input for PTE purposes. Enviva Cottondale, in Florida, is subject to the following permit condition:[23]

> **Essential Potential to Emit (PTE) Parameters**
>
> **B.1.** Permitted Capacity. The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu per hour heat input averaged annually and 151 MMBtu per hour averaged over a 24-hour period. [Permit No. 0630058-019-AC]

A similar condition also applies to the Drax Amite BioEnergy wood pellet plant in Mississippi:[24]

> L-6 For Emission Point AA-001, the permittee shall not exceed the heat input rate for the dryer and furnace combined of 225 MMBTU/hr as measured with a 3-hour block average. The 225 MMBTU/hr does not include the heat input associated with operation of the 24 MMBTU/hr RTO burner. [APC-S-2 II.B(10)]

Alternatively, DEQ could craft limits on the total fuel combusted in the two furnaces, or potentially the hours of operations. Whatever method DEQ chooses, however, the permit must restrict the parameters that actually limit NOx emissions, and implement corresponding monitoring, recordkeeping, and reporting to make the limit enforceable.

II. The Draft Permit Allows Enviva Southampton to Continue Emitting Air Toxics in Excess of the Legal Limits for At Least One Year.

As previously stated, the draft permit requires Enviva to install much-needed pollution control technology to reduce the facility's VOC and HAP emissions. Pursuant to the draft permit, these controls must be operational within one year after the final permit is issued.[25] Although we

[20] Calculated by multiplying the hourly heat input ratings of 175.3 and 180 MMBtu/hr by 8,760.
[21] We calculate an emission factor for the two furnaces as such: adding Enviva's emission estimates of 110.2 and 121.5 tpy together and multiplying by 2,000 results in 463,400 pounds per year, divided by the potential heat input of the two furnaces (3,112,428 MMBtu/year) results in 0.149 lb/MMBtu. For other units we accept Enviva's emission estimates.
[22] *Id.*
[23] Title V Operating Permit No. 0630058-020-AV for Enviva Pellets Cottondale, at Condition B.1 (Sept. 18, 2018). (Attachment A).
[24] Air Pollution Control Permit, Permit to Construct Air Emissions Equipment for Drax Amite, Permit No. 0080-00031, at Condition L-6 (Nov. 26, 2012). (Attachment B).
[25] Southampton Draft Permit at Condition 66.

appreciate that DEQ has required Enviva to adhere to a construction schedule, in this case, where credible evidence demonstrates that the facility is emitting HAPs and other air toxics in excess of the legal limits, it is paramount that DEQ protect public health and require the facility to promptly reduce its emissions to the required level. To protect the public and ensure compliance with the Clean Air Act, DEQ must modify the draft permit to restrict the facility's overall production to levels sufficient to ensure compliance with federal and state air toxics limits until the controls are operational.

A. Credible Evidence Demonstrates that the Facility has been Exceeding the Legal Limits for Air Toxics Since it Began Operation.

As discussed fully in the November 5, 2018 letter submitted to DEQ by the Environmental Integrity Project, Southern Environmental Law Center, and various other organizations, credible evidence demonstrates that Enviva Southampton constructed a major source of HAPs without complying with the Clean Air Act's section 112(g) case-by-case Maximum Achievable Control Technology (MACT) requirements, which are applicable to new major sources in industry sectors for which EPA has not promulgated a regulatory standard, such as the wood pellet manufacturing sector. Likewise, the facility has been violating permit limits on individual and total HAPs since it began operating.[26]

Despite this convincing demonstration by public interest groups—and DEQ's own acknowledgment over a year ago that there is "reason to believe that emissions factors in use by Enviva Southampton [for VOCs and HAPs] are not representative of actual operations,"—DEQ decided to forgo either filing an enforcement action or requiring immediate stack testing to provide further confirmation of the facility's permit violations. Instead, DEQ granted Enviva's request to defer testing until after it completes the present modification and expansion.[27] In other words, despite the fact that Enviva has known, or should have known, that it has been emitting HAPs at major source levels for years without installing MACT-level pollution controls, DEQ has apparently chosen to ignore this longstanding and ongoing violation (and the attendant risks to public health) and essentially authorize Enviva's continued violation for at least a year. DEQ's failure to take immediate action to enjoin Enviva's continuing violation is a dereliction of its duty to ensure Clean Air Act compliance and protect public health.

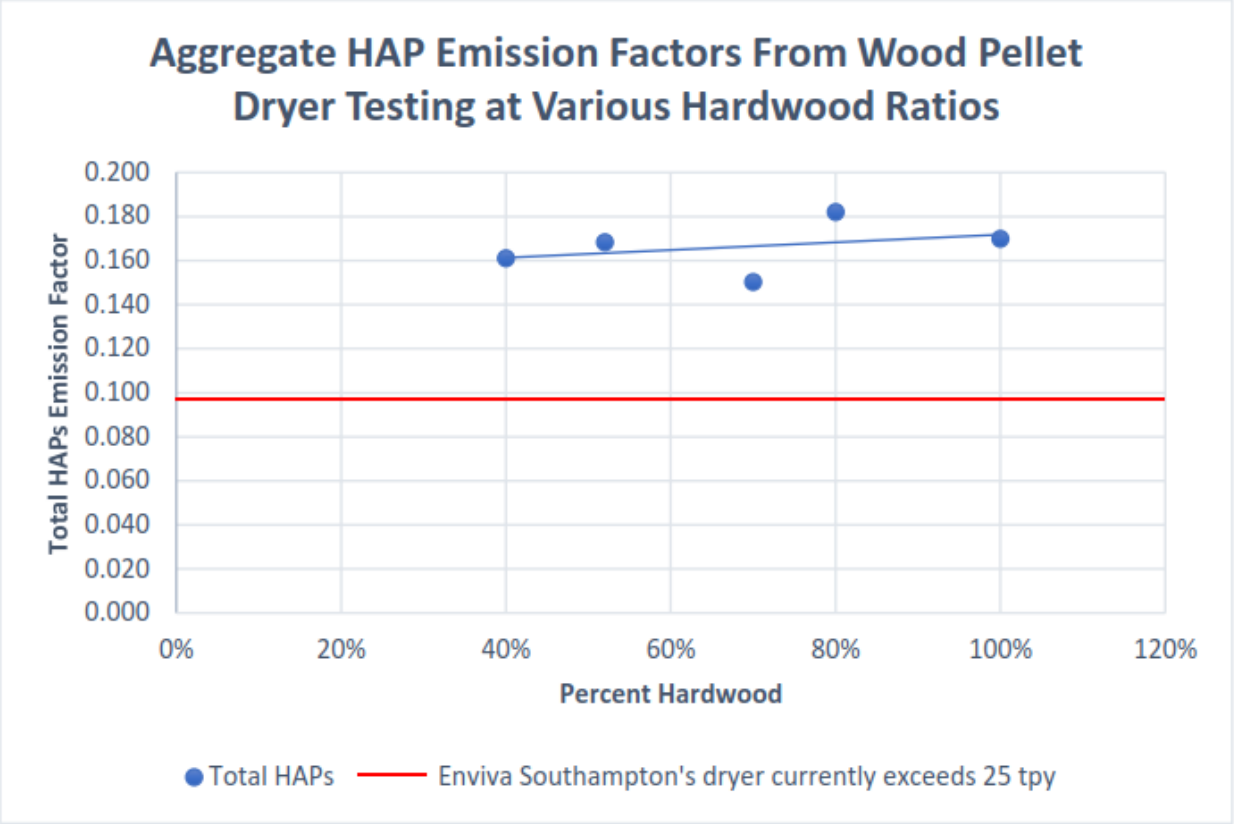
As established in our prior letters, Enviva has historically argued that HAP emissions and VOC emissions are directly linked to the amount of softwood being processed, such that any decrease in softwood will reduce both HAPs and VOCs at the same rate.[28] While we agree that VOCs

[26] Letter from Patrick J. Anderson, Environmental Integrity Project, to Michael G. Dowd, Director of Air Division, Virginia DEQ (Nov. 5, 2018) (The letter and all attachments, including stack tests, are incorporated herein by reference). (Attachment C).

[27] Letter from Todd M. Alonzo, Manager, Virginia DEQ Office of Air Compliance, to Joe Harrell, Manager, Corporate Environmental Health and Safety, Enviva Pellets Southampton (June 12, 2018); Letter from Michael Dowd, Director, DEQ Air and Renewable Energy Division, to Royal Smith, Executive Vice President, Enviva Pellets Southampton (Aug. 1, 2018).

[28] Enviva has estimated HAP emissions from Enviva Southampton's wood dryer as such: "[t]o account for hardwood emissions since no HAP emission factors are given [by EPA's database of emission factors, known as AP-42] for direct hardwood-fired [wood dryers], factors were conservatively calculated by multiplying AP-42 Section 10.6.2-3 HAP factors for green, direct softwood fired by the ratio of the VOC emission factors for hardwood to softwood drying (0.24/4.7)." Enviva Pellets Southampton Title V Permit Application, at Table 5 (Jan. 4, 2016). In other words, Enviva has assumed that each individual HAP is emitted at the same ratio as total VOC emissions, i.e.

generally are emitted at higher rates by softwood, Enviva's assumption about HAPs is untenable. In fact, as early as 2013, Enviva's own consultant, Air Control Techniques P.C., in a test report from an Enviva facility in Mississippi, revealed that "[t]he emissions of organic HAP compounds are not sensitive to the hardwood/softwood ratio."[29] Moreover, stack testing from numerous facilities across a range of softwood/hardwood ratios shows HAP emissions are at best independent from softwood processing, and may be slightly higher when processing more hardwood.[30]



This chart shows stack test results for uncontrolled dryers at Enviva Wiggins (at 40% hardwood), Enviva Sampson (48% hardwood), and numerous tests at Appling County Pellets (9 tests in all, with three at 70%, three at 80%, and three at 100% hardwood). Any emission factor above the red line (representing an emission factor of 0.093 lb/ODT) means Enviva Southampton's dryer

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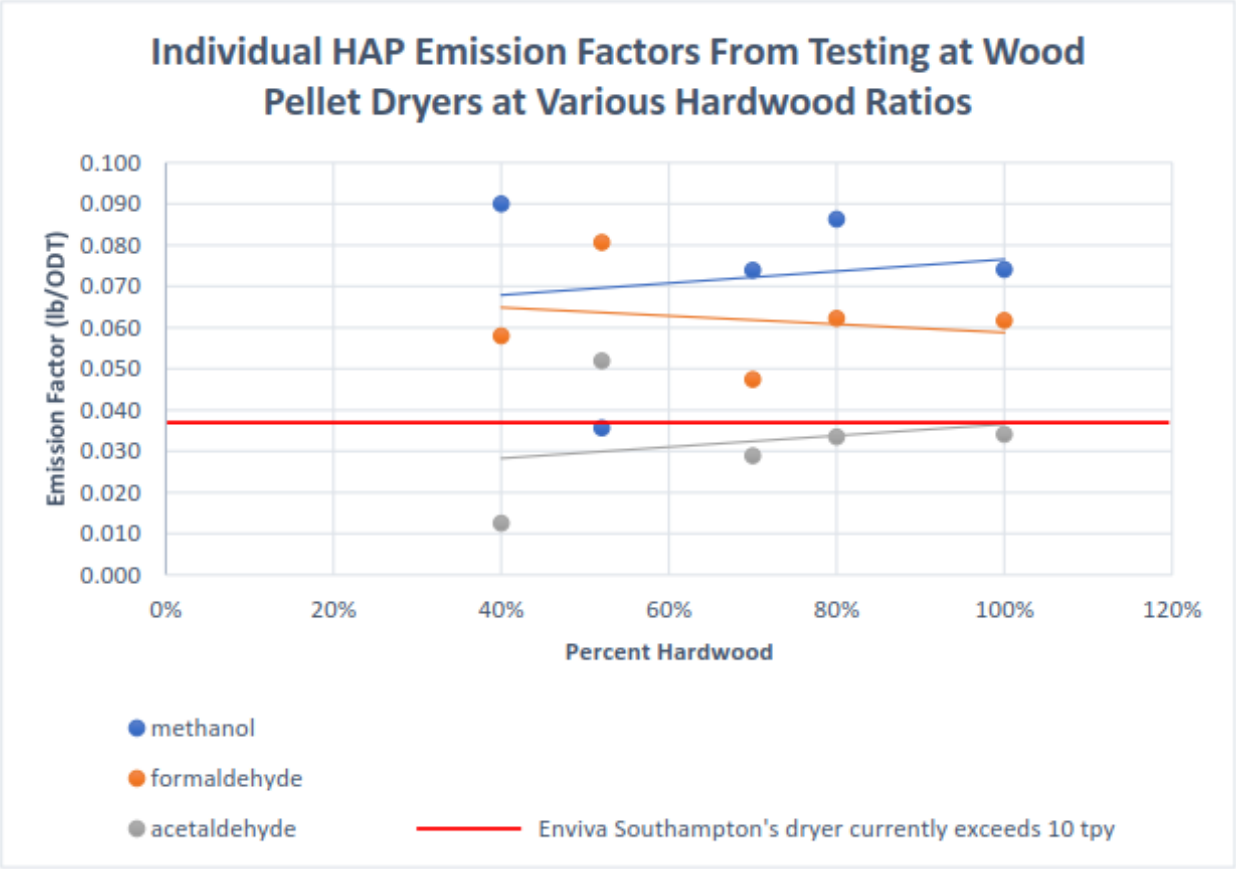
decreasing softwood also decreases HAP emissions, which is not borne out by either Enviva's consultant's statement or the stack tests EIP surveyed.

[29] Air Emission Test Report for Enviva Pellets Wiggins, Prepared by Air Control Techniques, at 14 (Oct. 31, 2013). (See Attachments to Nov. 5, 2018 letter from EIP and SELC to Michael Dowd, attached here as Attachment C).

[30] These tests include the March and April 2017 testing at Enviva Sampson in North Carolina (52% hardwood), the October 2013 testing at Enviva Wiggins in Mississippi (40% hardwood), and nine sets of testing conducted throughout 2017 at Appling County Wood Pellets in Georgia. Appling County tested three times at 70% hardwood, three times at 80% hardwood, and three times at 100% hardwood. All of these tests were conducted pursuant to compliance testing regulations of each state and following appropriate EPA methodology. For stack tests and more information, please refer to the Attachments to Nov. 5, 2018 letter from EIP and SELC to Michael Dowd, attached here as Attachment C.

has a PTE higher than 25 tpy. While there may be operating differences between these facilities, these tests show at a minimum that there is no dramatic decline in HAP emissions as hardwood usage increases. The three Appling County tests on the right side of the chart are especially revealing as the facility did not alter any other parameters as the facility increased hardwood usages, the tests were conducted within days of each other, and are based on a much larger sample size than most tests because each dot represents an average of three, three-hour tests—or nine hours of testing in all for each dot on the chart. Most significantly, however, is that all of the tests show that Enviva Southampton far exceeds the major source threshold when producing 535,000 tpy.

Note that the above chart and underlying emission factors only encompass methanol, formaldehyde, and acetaldehyde, and only emissions from wood dryers.[31] In other words, both aggregate dryer emissions and aggregate facility-wide HAP emissions are far underestimated. Even so, the average emission factor from all of the tests results, 0.166 lb/ODT, shows that Enviva Southampton's dryer currently has a PTE of 44.4 tpy. These same tests also show methanol and formaldehyde exceeding the 10 tpy threshold for individual HAPs:



This chart is based on the same sets of stack testing above, except showing individual HAPs. Again, there is no sharp decline in emissions as hardwood increases; in fact methanol and

[31] This was done for consistency as the Appling County testing only included these three HAPs.

acetaldehyde increase. The red line represents an emission factor of 0.037 lb/ODT, above which Enviva Southampton's existing dryer emits a given HAP at rates exceeding 10 tpy; every test for formaldehyde exceeds this rate, as do most methanol tests.

B. DEQ Must Modify the Draft Permit to Restrict Production to the Level Needed to Qualify as an "Area" Source of HAP Until Pollution Controls are Operational.

As explained above, this facility has been a major source of HAPs since initial construction. Accordingly, the facility is in continuing violation of both its existing HAP PTE limits and the case-by-case MACT requirements of Clean Air Act section 112(g). While the facility has proposed to install controls that should reduce the facility's emissions to below major source levels, these controls will not be operational for as long as a year (under the draft permit terms) and perhaps even longer. In the meantime, the facility's Clean Air Act violations will continue unless DEQ enjoins the facility's continued, unlawful operation. We urge DEQ to take immediate action to bring Enviva's longstanding noncompliance to an end. In particular, aside from bringing an enforcement action to address its past violations, DEQ must add conditions to this new permit that are sufficient to restrict the facility's HAP emissions to below the major source thresholds until such time as the facility's new pollution controls are operational.

The most effective (and perhaps only) way to restrict the facility's HAP emissions to below the major source threshold prior to the installation of controls it to incorporate a production limit into the new permit. Based on the average emission factors from the stack testing discussed above, DEQ must restrict production to no more 275,000 tpy to restrict methanol emissions to below the major source MACT threshold of 10 tpy;[32] doing so would also limit aggregate HAPs to below the major source MACT threshold of 25 tpy.

C. Enviva's Own Stack Tests Likely Showed Exceedances as Early as 2013.

Enviva Southampton has never been required to conduct HAP emissions testing. In 2013 and 2015, however, Enviva apparently conducted such testing at both Southampton and the essentially identical Enviva Northampton. Enviva has never reported the results of these tests to any state agency, however, Enviva included references to the tests in a table of numerous stack tests Enviva has conducted over the years.[33] Enviva submitted this table after North Carolina's permitting authority requested more details on what tests Enviva referred to when it claimed emission estimates "are based on stack testing from comparable Enviva facilities."[34] Unfortunately, Enviva did not include the actual test results nor has the company done so since. An excerpt from that table is below:

[32] Methanol, the HAP emitted at the highest rate, had an average emission factor across the tests of 0.072 lb/ODT.
[33] Enviva, Response to Additional Information Request For Minor Source Permit Modification, at Attachment A (July 18, 2018). (Attachment D).
[34] *Id.* at 1.

Table A-1. Enviva Emission Factor Assessment Source Test Details					
Emission Source Type Tested	**Facility Tested**	**Test Date(s)**	**Pollutants Tested**	**Operating Production Rate (ODT/hr)**	**Softwood %**
Dryer	Cottondale	--	VOC	44.53	100%
	Georgia Biomass	--	VOC	55.66	100%
	German Pellets	--	VOC	38.5	100%
	Colombo	10/3/2017	VOC	64.27	80%
	Sampson	4/18/17 to 4/19/17	VOC	65.4	52%
	Northampton	Oct. 2013	Acetaldehyde Formaldehyde Propionaldehyde	59.76	10%
	Northampton	Sept. 2013	Acetaldehyde Formaldehyde Methanol Propionaldehyde	64.5	10%
	Southampton	12/3/2013	Acrolein Formaldehyde Methanol Phenol Propionaldehyde	62	10%
	Southampton	12/1/2015	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde	64.3	10%
	Sampson	April 2017	Acetaldehyde Formaldehyde Methanol Propionaldehyde	65.4	52%

Despite pressure from public commenters and state agencies (e.g., Virginia DEQ's request for Enviva to conduct new stack testing, to which Enviva objected), Enviva has never produced these test results. If these tests showed compliance, Enviva surely would have provided them to DEQ to support its claim that it is operating in compliance with its permit. Given Enviva's apparent reticence in allowing these test results to be made public, the logical conclusion is that they show the opposite: that the facility has never been operated in compliance with Clean Air Act requirements for HAPs.

Enviva addressed these tests during the public hearing on this draft permit, but dismissed them as "engineering studies" that "do not produce any reliable definitive data" and "are not used for that purpose by regulators or by us."[35] These statements directly contradict how Enviva previously represented these tests during the permitting process for its facility in Hamlet, North Carolina. In that proceeding, which occurred only a year ago, Enviva explicitly relied on these tests to support its HAPs emission estimates for the plant's modification. At that time, rather than describing these tests as "unreliable" "engineer studies," Enviva presented them as stack tests for

[35] Enviva Southampton Public Hearing Transcript at 13:21-14:14 (Aug. 20, 2019) (comment from Yana Kravtsova, Enviva's Vice President of Environmental Affairs).

the explicit purpose of providing reliable and definitive data upon which Enviva Hamlet's HAPs emissions could be accurately estimated. Either these tests produced valid data sufficient to support Enviva's emission estimates for new facilities, or Enviva relied on tests that "do not produce any reliable definitive data" to project the Hamlet plant's emissions of toxic air pollution, which itself would be troubling.

Further, and more fundamentally, Enviva seems to be ignoring Virginia's "credible evidence" rule, which explicitly allows for *any* credible evidence to be used in determining compliance with emission limits for HAPs and the MACT applicability.[36] Specifically, "[f]or the purpose of . . . establishing whether or not a person has violated or is in violation of any standard in this chapter [Virginia's Hazardous Air Pollutant Regulations], nothing in this chapter shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source" is or was in compliance "if the appropriate performance or compliance test had been performed."[37] Contrary to Enviva's claims that the "engineering studies" are wholly unrelated to demonstrating compliance, they readily qualify as "credible evidence" that could certainly demonstrate non-compliance.

D. DEQ Must Exercise Its Authority to Request the 2013 and 2015 Stack Testing.

The draft permit at issue is subject to 9 Va. Admin. Code § 5-80-1150, which governs the information required to be submitted with a permit application. In key part, this regulation requires that "[e]ach application for a minor NSR permit shall include such information as may be required by the board to . . . determine compliance with any emission standards which are applicable."[38] The rule also requires the submittal of "[a]ny additional information or documentation that the board deems necessary to review and analyze the air pollution aspects of the new stationary source or the project."[39]

In its application for the present modification, Enviva has not provided any emissions information regarding HAPs for the period of operation prior to the installation of controls. Previous Enviva Southampton permit applications rely on AP-42 emission factors "adjusted" for hardwood using Enviva's debunked assumption that HAPs correlate with VOCs, as discussed above. That information is out of date and not sufficient to "determine compliance" with emission standards such as case-by-case MACT and emission limits which must be incorporated into the permit, as discussed below.

DEQ must therefore exercise its authority to request the 2013 and 2015 stack tests, as these tests are clearly "information" required to "determine compliance," 9 Va. Admin. Code § 5-80-1150(B), as well as "information or documentation" necessary to "review and analyze the air pollution aspects" of the project, 9 Va. Admin. Code § 5-80-1150(B)(9). Otherwise, the permit application cannot be deemed complete in light of Enviva's failure to provide accurate emission estimates covering up to a full year of operation. Finally, as a matter of policy, DEQ should

[36] 9 Va. Admin. Code § 5-60-20(E). The "any credible evidence" rule allows for enforcement actions premised on any credible evidence, including the exclusive use of that credible evidence. The "any credible evidence" rule allows for demonstrating noncompliance even where a facility has not conducted emissions testing.
[37] *Id.*
[38] 9 Va. Admin. Code § 5-80-1150(B).
[39] 9 Va. Admin. Code § 5-80-1150(B)(9).

request these tests because they are a matter of public interest, yet they are virtually beyond the reach of the public.

III. The Final Permit Must Contain More Stringent Stack Testing Requirements.

While we acknowledge and appreciate that the draft permit implements more testing requirements than previously required at Enviva Southampton, the draft permit only requires stack tests once every five years.[40] Compliance testing every five years is inadequate to ensure the facility complies with its emission limits taken to avoid PSD and MACT applicability. Testing is especially important for NOx emissions because Enviva calculates the facility will have a PTE of 247 tpy, just shy of the major source threshold. Moreover, Enviva's estimated facility-wide potential NOx emissions are significantly higher than the limits in the draft permit. Since the facility is physically capable of emitting NOx at much higher rates than permitted, it is particularly important that testing occur regularly to ensure continuing compliance. Recently, North Carolina DEQ has decided to require annual stack tests at the three Enviva plants undergoing or proposing modifications.[41] We see no reason to require less frequent testing at Enviva's Southampton facility.

More frequent testing is especially necessary at wood pellets plants because emissions at these plants are highly variable, and there is a dearth of available data. To date, only a few pellet plants have been subject to relatively frequent testing requirements, but the results from those facilities show how variable emissions can be. For instance, testing just a year apart on pellet coolers at a Georgia pellet plant produced an emission factor that was twice as high as the initial compliance testing, with no modifications or other operating changes apparently responsible.[42]

Finally, we note that DEQ is long overdue in acting on Enviva's 2015 Title V permit application, and once DEQ finally takes action, we believe that Title V will require more frequent stack testing. EPA has frequently objected to permits that only require once-per-permit term testing requirements without other monitoring, as is the case here, and testing every five years is essentially identical to the requirement to test only once per five-year Title V permit term.[43] We urge DEQ to go ahead and incorporate an annual stack testing requirement into this permit.

IV. DEQ Must Explain How Enviva Will Demonstrate Compliance with Permit Limits.

The draft permit implements both short-term emission limits expressed as pounds per hour (lb/hr), as well as long-term limits expressed as tons per year. For several pollutants, the short-

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[40] Southampton Draft Permit at Condition 62.

[41] *See,* e.g. North Carolina DEQ, Air Quality Permit No. 10365R03 for Enviva Pellets Hamlet, LLC, at Condition 2.2(A)(2)(d) (Jan. 14, 2019), available at https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-hamlet. North Carolina has implemented similar testing conditions in recent draft permits for Enviva Sampson and Enviva Northampton; draft permits for those facilities are available at https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and.

[42] *Compare* August 28, 2014 stack tests on the pellet coolers at Hazlehurst Wood Pellets in Georgia (producing an emission factor of 0.30 lb/ODT, *with* testing at that same plant conducted on December 16, 2015 (producing an emission factor of 0.62 lb/ODT) (test excerpts at Attachment E).

[43] EPA has objected to Title V permit conditions on the basis that once-per-permit-term testing requirements do not constitute periodic monitoring sufficient to comply with 40 CFR 70.6(a)(3)(B). *See, e.g.*, *In re Consolidated Edison Co. of NY, Inc, Ravenswood Steam Plant*, Petition No. II-2001-08, at 12 (Sept. 30, 2003).

term and long-term limits are essentially the same (i.e. the hourly limit multiplied by 8,760 hours equates to the annual limit), but for NOx, CO, and certain HAPs, the short-term limits do not equate with the long-term limit. For instance, the short-term hourly limit for the two furnaces for NOx are 23.5 lb/hr and 27.8 lb/hr, which equates to 224.7 tpy—yet the combined allowable emissions for these units is 145.5 tpy.[44] For CO, meanwhile, the short-term limits are 28.3 lb/hr and 32.9 lb/hr, which equates to 268 tpy while the combined annual emission limit is 156.4 tpy.[45]

The only compliance demonstration related to both the long term and short term limits are the initial and continuing stack test requirements. It is unclear, however, how stack testing will demonstrate compliance with these limits. For instance, if a stack test produces a NOx emission rate of 22 lb/hr for each furnace, the furnaces are in compliance with the short-term limits but likely exceeding the annual limit depending on how often the dryers have operated. DEQ must clarify that, in such a scenario, compliance with the short-term limits is not a defense to exceedances of the long-term limit.

The draft permit also omits any monitoring and recordkeeping requirements for tracking actual emissions, except for HAP emissions, and even that requirement is devoid of details on how Enviva shall calculate its emissions (i.e. what emission factors shall be used, where they derive from, what equation shall be used, etc.). In order to assure compliance with the emission limits, the permit needs to require Enviva to monitor and account for emissions from all units, and must include the emission factors and equations utilized to do so. This requirement has been recently reiterated by EPA, which objected to a Title V permit that relied on emission factors to monitor emissions but which omitted those emission factors and calculation methodology from the permit.[46] EPA explained that, "without a clearly identified method for determining monthly emissions for each such HAP, the limitations on individual HAP and total HAP emissions are legally and practically unenforceable."[47] We see no reason why this same logic would not apply to criteria pollutants as well.

V. The Draft Permit Should Implement Reporting Requirements.

The draft permit requires Enviva to *record* many crucial data points directly related to emissions, such as pellet production, softwood usage, control device parameters, and emissions calculations. The draft permit, however, does not require Enviva to *report* any of this data to DEQ. Such reporting is crucial to effective public oversight. It is difficult or downright impossible for members of the public to access this information without a reporting requirement, and the lack of access to these records seriously hinders citizen enforcement, which is a key component of the Clean Air Act. Given the documented history in this industry of numerous, serious exceedances in recent years, public oversight is especially important.[48]

While we recognize that the facility's overdue Title V permit, once issued, will have to require regular reporting of monitoring results, we urge DEQ to require such reporting now. We again

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[44] *Compare* Southampton Draft Permit at Condition 48, *with id.* at Conditions 44-47.
[45] *Id.*
[46] *In re Piedmont Green Power, LLC*, Order on Petition No. IV-2015-2, at 15 (Dec. 13, 2016), *https://www.epa.gov/sites/production/files/2016-12/documents/piedmont_response2015.pdf.*
[47] *Id.*
[48] *See generally*, EIP, Dirty Deception: How the Biomass Industry Skirts the Clean Air Act (Apr. 26, 2018), https://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf.

point out that North Carolina and many other states have implemented similar reporting requirements for Enviva and other pellet plants prior to Tile V issuance, and we see no reason that Enviva should not meet the same requirement for its Southampton facility. For example, Enviva Hamlet is subject to the following reporting requirements:[49]

> **Reporting** [15A NCAC 02Q .0308(a)]
>
> j. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:
>
> i. The monthly VOC, NOx, and CO emissions for the previous 17 months. The emissions must be calculated for each of the 12-month periods over the previous 17 months.
> ii. A report indicating and explaining all instances of the average minimum regenerative thermal oxidizer and regenerative catalytic oxidizer combustion chamber temperature falling below the temperature range established during the performance test or noting that no such instances have occurred.
>
> k. All instances of deviations from the requirements of this permit must be clearly identified.

VI. The Draft Permit Does Not Protect the Local Community from Harmful Fugitive Dust Emissions.

Wood pellet plants generate a lot of fugitive dust, i.e., airborne particulate matter. In fact, one of the most common air pollution complaints raised by residents of communities where wood pellet plants are located is the large amount of fugitive dust that escapes into surrounding neighborhoods.[50] Enviva Southampton is no exception. As DEQ is aware, neighbors of the plant expressed frustration that dust is still coating their property years after first raising the issue with Enviva.[51] Similar complaints have been made by neighbors of Enviva's other facilities; for instance, Mississippi issued a Notice of Violation to Enviva Amory, describing "multiple complaints over the past year pertaining to sawdust and smoke leaving the [Enviva Amory] facility impacting neighboring properties and vehicles."[52]

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[49] North Carolina DEQ, Air Quality Permit No. 10365R03 for Enviva Pellets Hamlet, LLC, at Condition 2.2(A)(2)(j) (Jan. 14, 2019), available at https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-hamlet.

[50] For example, in 2014, residents of West Monroe, Louisiana publicized their ongoing concerns regarding large amounts of fugitive dust released from the Bayou Wood Pellet Plant. *See* Zach Parker, *Homeowners Seek EPA's Help with Pollution Complaints*, The Ouachita Citizen (Nov. 5, 2014), http://www.hannapub.com/ouachitacitizen/news/local_state_headlines/homeowners-seek-epa-s-help-with-pollution-complaints/article_5d11a19e-650b-11e4-8331-001a4bcf6878.html); *see also Residents are Having Concerns with Saw Dust Particles in the Air Coming from Bayou Wood Pellet Plant* (Jan. 21, 2015), http://www.knoe.com/home/headlines/Residents-are-having-concern-with-dust-particles-in-the-air-coming-from--289388501.html (describing community concerns about fugitive dust from a wood pellet plant in West Monroe, Louisiana).

[51] On August 6, 2019, DEQ held a public information meeting for the Enviva Southampton modification. Although this meeting was explicitly not made a part of the public record, many members of DEQ were present at the meeting and heard three residents complain about living adjacent to the Southampton facility. Specifically, after the meeting officially ended, several DEQ staffers talked with these residents and heard their specific complaints about fugitive dust, noise, and truck traffic.

[52] North Carolina DEQ, Enviva Northampton Public Hearing Audio at 29:04 (dust complaint by Anthony Robinson), 2:02:10 (dust complaint by Sybaleen Auston), 2:35:25 (dust complaint by Richard Harding) (Aug. 20,

Major sources of fugitive dust at wood pellet plants include wood handling, wood storage piles, conveyor transfer points, yard dust, haul road dust, and engine exhaust.[53] Health problems associated with exposure to particulate matter pollution primarily involve damage to the lungs and respiratory system due to inhalation. Specifically, the inhalation of dust particles can irritate the eyes, nose and throat; cause respiratory distress, including coughing, difficulty in breathing and chest tightness; increase the severity of bronchitis, asthma and emphysema; cause heart attacks and aggravate heart disease; and lead to premature death in individuals with serious lung or heart disease.[54] When exposed repeatedly over a longer time period, fugitive dust exposure can lead to severe illness such as cancer.[55] In addition to affecting human health, fugitive dust reduces visibility, affects surface water, reduces plant growth, and can be a nuisance.

Although the draft permit does include fugitive dust requirements tailored to wood pellet operations, these conditions have not resolved the fugitive dust issues expressed by those living in close proximity to the Southampton facility. In particular, Condition 13—which addresses fugitive dust emissions from the de-barker and chipping operations, as well as the wood material deliveries, handling, and loadout operations—is the same as Condition 15 in Enviva's current permit, which was finalized in January 2015.[56] As demonstrated by recent public statements from several of Enviva's neighbors, this and other fugitive dust provisions that have been in place for several years have not resolved the fugitive dust issues associated with Enviva's operations. DEQ must revise the draft permit to include heightened requirements tailored to Enviva Southampton's operations and the dust concerns expressed by neighboring residents in order to actually prevent fugitive emissions from becoming airborne. These should include requiring windbreaks or enclosed structures for storage piles and minimizing the drop heights and transfer points. Additionally, DEQ should modify Condition 57 of the draft permit to require daily monitoring and recordkeeping for visible emissions of fugitive dust from storage piles and handling operations. Currently, Condition 57 only requires weekly monitoring. Like Condition 13, Condition 57 is essentially identical to a provision in Enviva's current permit.[57] The recent complaints from neighbors indicate that the weekly monitoring provision has been insufficient to identify and resolve fugitive dust issues at the Southampton facility.

The need for these additional fugitive dust requirements for this facility is especially acute due to the fact that, as discussed below, this facility will impact the health and well-being of communities that are already plagued by numerous polluting facilities. Because the draft permit

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2019), https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and; *see also* Mississippi Department of Environmental Quality, Notice of Violation for Enviva Pellets Amory (May 23, 2017). (Attachment F).

[53] British Columbia, Ministry of the Environment, Air Emissions Fact Sheet: Wood Pellet Manufacturing Facilities (July 2011). (Attachment G).

[54] New Hampshire Department of Environmental Services, Environmental Fact Sheet, Fugitive Dust (2014), https://www.des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-42.pdf); *see also* Wolfgang Stelte, Danish Technological Institute, Guideline: Storage and Handling of Wood Pellets, at 6 (Dec. 2012). (Attachment H).

[55] *Id.*

[56] *Compare* Southampton Draft Permit at Condition 13, *with* Stationary Source Permit to Modify and Operate for Enviva Southampton, Registration No. 61653, at Condition 15 (Jan. 6, 2015) [hereinafter, Southampton Existing Permit].

[57] *Compare* Southampton Draft Permit at Condition 57, *with* Southampton Existing Permit at Condition 30.

authorizes the facility to increase its wood pellet production, the facility will generate substantially more fugitive dust than was originally projected. Given the vulnerability of the affected community, DEQ should be proactive in ensuring that Enviva does everything within reason to reduce the facility's adverse impact on nearby communities.

VII. DEQ Must Supplement Operational and Emission Limits Applicable Prior to Operation of the New VOC Controls.

As explained above, Enviva has underestimated its HAP emissions and DEQ must require the facility to comply with a much lower production limit until its new controls are operational. But even if Enviva's HAP estimates were correct, the permit would still be deficient in terms of restricting emissions of both criteria pollutants and HAPs prior to installation of controls.

The draft permit includes operating limits similar to Enviva Southampton's existing permit, i.e. the dryer production limit and a cap of softwood throughput, that apply until the new control technology is installed.[58] The draft permit further requires these controls to be installed no later than one year after the permit is issued.[59] Unfortunately, these conditions governing the operations between the issuance of this permit and the installation of controls are faulty in several other regards. First, they do not actually restrict facility-wide PTE for any pollutant, even setting aside our argument that Enviva has underestimated HAP and potentially, because they do not apply to the entire facility's emissions. Second, the draft permit's new emission limits appear to apply only after the installation of controls, leaving the facility without any PTE limits for up to a year after permit issuance (or longer with DEQ approval).

A. The Interim Operating Limits Do Not Restrict PTE to Below the Major Source Threshold.

The draft permit contains the following operating limits that apply during the interim period between permit issuance and installation of controls:

- ". . . the throughput of the dried wood chips from the wood chip dryer ES-DRYER-1 shall not exceed 535,260 ODT per year at 10% maximum softwood."[60]
- "[p]rior to the date whereupon RTO-1, RCO/RTO-1 and RCO/RTO-2 have completed construction and commenced operation, the permittee shall not operate wood chip dryer ES-DRYER-2."[61]

The key issue with these two provisions is that they limit operations only in terms of the wood dryers. Nothing prevents Enviva from processing greater amounts of wood or higher rates of softwood in the post-dryer units immediately upon issuance of the final permit. This is problematic because most Enviva plants supplement wood dried on site with purchased, pre-dried wood that is introduced into the dry hammermills and/or pelletizers (i.e. post-dryer units). In fact, Enviva already has the capability of processing higher levels of throughput and softwood in the dry hammermills and pelletizers—Enviva's 2016 Title V application lists the existing dry hammermills and pelletizers as having a throughput capacity of 70.83 tons per hour, equating to

[58] Southampton Draft Permit at Condition 66(a).
[59] *Id.* at Condition 66.
[60] *Id.* at Condition 66(a).
[61] *Id.* at Condition 66(b).

620,470 tpy.[62] Moreover, as part of the expansion, Enviva will now be allowed to install additional post dryer capacity in the form of an additional dry hammermill and other modifications as necessary to increase facility-wide production to 781,255 tpy, which may occur well before the new VOC controls are operational.

While Enviva Southampton's various applications appear silent on whether it uses pre-dried shavings in its particular operations, the use of pre-dried shavings to increase production is common at both Enviva plants and other wood pellet plants. All four of Enviva's North Carolina plants (Enviva Northampton, Enviva Hamlet, Enviva Sampson, and Enviva Ahoskie) utilize pre-dried shavings, as does Enviva's Florida facility (Enviva Cottondale).[63]

DEQ must either verify that Enviva Southampton is not capable of processing pre-dried shavings, or implement limits restricting throughput and softwood content of not only the dryers, but also the post-dryer units as well.

B. The Draft Permit Fails to Implement Any Emission Limits During the First Year of Operations.

As noted above, the new permit supersedes the existing 2015 operating permit, and implements new, stricter emission limits based on the use of VOC and HAP controls. While we of course support these controls and limits, until the controls are installed it does not appear that the facility is subject to any emission limits. The old limits are superseded (i.e., voided) by this permit and therefore do not apply. At the same time, Enviva cannot possibly comply with the new limits until the VOC and HAP controls are installed. Moreover, the new limits apply specifically to the new control units, i.e., the permit restricts emissions from the dryer by implementing limits that apply to "RTO-1," which will not exist for up to a year or longer after permit issuance. In other words, the old limits appear voided, and the new permit only limits emissions after the new controls are installed.

As discussed at length above, emission limits are a necessary part of restricting PTE to avoid both PSD and case-by-case MACT. By exempting Enviva from any emission limits for up to a year, the permit fails to restrict PTE for numerous pollutants. DEQ must remedy this by, at a minimum, incorporating the existing emission limits into the draft permit to apply during the interim period before the controls are operational.

VI. DEQ Failed to Consider the Environmental Justice Impacts of the Proposed Modification to Nearby Communities.

On August 11, 2019, DEQ issued a draft permit modification to Enviva Southampton that would significantly and disproportionately impact low-income communities and communities of color, and it did so without a full and complete understanding of how the proposed expansion would impact those communities. The Enviva Southampton facility is located in Franklin, Virginia, an

[62] Enviva, Initial Title V Application, Tables 7 and 8 (Jan. 4, 2016).

[63] *See, e.g.*, North Carolina DEQ, Air Permit Review for Enviva Pellets Northampton, at 2 (Oct. 12, 2015), https://files.nc.gov/ncdeq/Air%20Quality/permits/files/Wood_Pellets_Industry/Northampton/2015_Enviva_Pellets_Northampton.pdf ("The dry line system allows for pre-dried material to be introduced at the point of the hammermill pre-screens . . . The dry line system will increase throughput to the hammermills by approximately 10 tons per hour containing up to 100% softwood.").

independent city located mostly within Southampton County, and less than 8 miles from the North Carolina / Virginia state line. The people of Franklin and nearby communities are already burdened by other sources of air pollution and they suffer from poverty and relatively poor health outcomes.[64]

Although the draft permit requires Enviva Southampton to install much-needed pollution control technology, which will reduce VOCs and HAPs, the draft permit will also cause an increase of other harmful pollutants, including significant increases in NOx, PM, and CO. The draft permit also provides for an increase in wood pellet production at the facility by just under 250,000 tpy—an increase that will result in other harmful impacts to nearby communities in Franklin and the surrounding areas. Primarily, increased production will result in increased truck and rail traffic, which will in turn increase attendant pollution, fugitive dust, odor, and noise. These impacts are not trivial and can have significant negative impacts on the health and quality of life for people living nearby to the facility, especially when the cumulative impact from other air pollution sources are considered. "Environmental justice" is defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[65] It is within the broad authority of DEQ to consider environmental justice issues during the permitting process[66] and, in fact, doing so is paramount to the Commonwealth's policy of protecting the environment for the benefit of all people,[67] as well as Governor Northam's recent statements that "[n]o population, especially minority, low-income, or historically-underserved communities, should face higher levels or greater impacts of pollution than other populations."[68]

Despite the Commonwealth's purported commitment to addressing environmental justice concerns, DEQ issued the draft permit to Enviva Southampton without conducting a full environmental justice analysis. Instead, DEQ used the EPA's environmental justice screening tool ("EJSCREEN") to review the "environmental indicators" for a 1, 2, and 5 mile radii from the Southampton facility and then concluded, without further analysis, that because modeling for the "proposed project demonstrates compliance with all federal and state air quality

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[64] *See* Virginia County Health Rankings & Roadmaps (2019), https://www.countyhealthrankings.org/sites/default/files/state/downloads/CHR2019_VA.pdf (ranking Southampton County as 76th and 79th in the State for health outcomes and health factors, respectively, and Franklin 64th and 67th out of a total of 133 counties).

[65] *Environmental Justice*, EPA.gov, www.epa.gov/environmentaljustice.

[66] Matthew J. Strickler, Sec. of Nat'l Res., Report to Governor Ralph S. Northam on Executive Order Number Six, https://www.governor.virginia.gov/media/governorvirginiagov/media/EO-6-Final-Report-from-SNR.pdf (discussing the "broad legislative mandate" of DEQ "that extends beyond the traditional responsibilities of protecting air and water quality . . . and into much more complex areas of public policy [including] issues of environmental justice"); *see* Va. Code § 10/1-1183 ("It shall be the policy of the Department of Environmental Quality to protect the environment of Virginia in order to promote the health and well-being of the Commonwealth's citizens.").

[67] Va. Const. Art. 11, § 1 ("It shall be the Commonwealth's policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth.").

[68] Executive Order 29 (2019), https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-29-Establishment-Of-The-Virginia-Council-On-Environmental-Justice.pdf.

concentration standards," it will "not cause disproportionately high and adverse human health or environmental effects on any resident of the local community or any resident of Virginia."[69]

EPA's EJSCREEN is an environmental justice screening tool that combines environmental and demographic indicators and provides national, regional, and state information on eleven environmental justice indexes ("EJ Indexes"). Instead of reviewing these EJ Indexes for the Southampton facility, DEQ only looked at the "environmental indicators." Although relevant, the environmental indicators only tell one part of the story—it is the unique combination of environmental and demographic indicators for a particular area that highlights the potential *environmental justice* concerns. For example, according to DEQ the "air quality related environmental indicators (state) ranged from the 12th to the 41st percentile" when looking at a 5-mile radius of the facility.[70] In comparison, the EJ Indexes for the same area reveal that the area is actually in the 77th percentile when compared to the rest of the state for $PM_{2.5}$, ozone, and air toxics, and is in the 75th percentile for respiratory hazards.[71] Moreover, the city of Franklin, where the Southampton facility is located, is in the 83rd percentile for $PM_{2.5}$, ozone, and air toxics, and is in the 80th percentile for respiratory hazards.[72] The city of Franklin is also 62% minority and 44% low-income.

While we acknowledge that DEQ did take steps to enhance the public outreach for the Enviva Southampton draft permit,[73] the agency did not actually analyze potential environmental justice impacts from the proposed modification. Specifically, DEQ failed to consider the cumulative impacts of the proposed modification on nearby communities, taking into account the existing pollution sources in the area. For example, within a 5-mile radius of the Southampton facility there are at least 27 air pollution sources (including Enviva) and 9 toxic releases, as well as 3 hazardous waste sites.[74]

The proposed modification will add to the cumulative impact of pollution sources in the area. These other polluting sources must be considered in order for DEQ to adequately identify and address potential environmental justice concerns. Additionally, a full environmental justice analysis should consider the background health of the surrounding communities and the proximity of the facility to specific sensitive receptors, such as churches, schools, parks, and hospitals. All of this information must be considered, along with the cumulative impact of other polluting sources, to determine whether the proposed expansion of the Southampton facility will disproportionately impact communities of color and low-income communities and, if so, determine how to best alleviate such harm as it relates to the specific permit request. For the Southampton facility, DEQ should move forward as expeditiously as possible in issuing a permit to install the much-needed pollution controls. The distinct issue of the permit expansion, however, should be addressed in a separate permitting action that only proceeds after DEQ has fully analyzed and addressed potential environmental justice concerns.

Conclusion

[69] Draft Engineering Analysis, *supra* note 7, at Section I.
[70] *Id.*
[71] EPA EJSCREEN Report: Enviva Southampton – 5 Mile Radius (Sept. 5, 2019). (Attachment I).
[72] EPA EJSCREEN Report Franklin, Va. (Sept. 26, 2019). (Attachment J).
[73] *See* Virginia DEQ, Outreach Methods – Enviva Southampton Project. (Attachment K).
[74] EPA EJSCREEN Report Enviva Southampton – 5 Mile Radius and Pollution Sources (Sept. 5, 2019). (Attachment L).

For the reasons set out above, the draft permit for Enviva Southampton is deeply flawed and must be denied or, in the alternative, must be revised prior to issuance to address the issues raised by these comments. DEQ must ensure the plant will not exceed the major source PSD threshold without an appropriate permit. DEQ must also implement limits that restrict HAP emissions to legal levels prior to the installation of controls, and address the other issues raised above.

Respectfully submitted,

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On behalf of the Dogwood Alliance, the Virginia Chapter of the Sierra Club, Coastal Plain Conservation Group, the Rachel Carson Council, Partnership for Policy Integrity, Natural Resources Defense Council, Our Children's Earth.

Attachments: Comment Attachments A through L.

Attachments A through L.pdf

Attachments to Comments on the Draft Stationary Source Permit to Construct and Operate for Enviva Pellets Southampton (Registration No. 61653).

Attachment A: Title V Operating Permit No. 0630058-020-AV for Enviva Pellets Cottondale, at Condition B.1 (Sept. 18, 2018).

Attachment B: Air Pollution Control Permit, Permit to Construct Air Emissions Equipment for Drax Amite, Permit No. 0080-00031, at Condition L-6 (Nov. 26, 2012).

Attachment C: Letter from Patrick J. Anderson, Environmental Integrity Project, to Michael G. Dowd, Director of Air Division, Virginia DEQ (Nov. 5, 2018).

Attachment D: Enviva, Response to Additional Information Request For Minor Source Permit Modification, at Attachment A (July 18, 2018).

Attachment E: Hazlehurst Wood Pellets Stack Testing Excerpts.

Attachment F: Mississippi Department of Environmental Quality, Notice of Violation for Enviva Pellets Amory (May 23, 2017).

Attachment G: British Columbia, Ministry of the Environment, Air Emissions Fact Sheet: Wood Pellet Manufacturing Facilities (July 2011).

Attachment H: Wolfgang Stelte, Danish Technological Institute, Guideline: Storage and Handling of Wood Pellets, at 6 (Dec. 2012).

Attachment I: EPA EJSCREEN Report: Enviva Southampton – 5 Mile Radius (Sept. 5, 2019).

Attachment J: EPA EJSCREEN Report Franklin, Va. (Sept. 26, 2019).

Attachment K: Virginia DEQ, Outreach Methods – Enviva Southampton Project.

Attachment L: EPA EJSCREEN Report Enviva Southampton – 5 Mile Radius and Pollution Sources (Sept. 5, 2019).

Attachment A

Enviva Pellets Cottondale, LLC
Cottondale Wood Pellet Plant

Facility ID No. 0630058
Jackson County

Title V Air Operation Permit Renewal

Permit No. 0630058-020-AV
(Renewal of Title V Air Operation Permit No. 0630058-005-AV)

Permitting Authority:

State of Florida
Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road
Mail Station #5505
Tallahassee, Florida 32399-2400

Telephone: (850) 717-9000
Email: DARM_Permitting@dep.state.fl.us

Compliance Authority:

State of Florida
Department of Environmental Protection
Northwest District Office
160 West Government Street, Suite 308

Telephone: (850) 595-8300
Fax: (850) 595-8393

Title V Air Operation Permit Renewal

Permit No. 0630058-020-AV

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Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Sent by Electronic Mail – Received Receipt Requested

PERMITTEE:
Enviva Pellets Cottondale, LLC
2500 Green Circle Parkway
Cottondale, Florida 32431

Permit No. 0630058-020-AV
Cottondale Wood Pellet Plant
Facility ID No. 0630058
Title V Air Operation Permit Renewal

The purpose of this permit is to renew the Title V air operation permit for the above referenced facility. The existing Enviva Pellets Cottondale, LLC, Cottondale Wood Pellet Plant is located in Jackson County at 2500 Green Circle Parkway, in Cottondale, Florida. UTM Coordinates are: Zone 16, 653.9 km East and 3401.7 km North; and, Latitude: 30° 44' 17" North and Longitude: 85° 23' 33" West.

The Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-213. The above-named permittee is hereby authorized to operate the facility in accordance with the terms and conditions of this permit.

Effective Date: September 18, 2018
Renewal Application Due Date: February 4, 2023
Expiration Date: September 17, 2023

Executed in Tallahassee, Florida.

Jonathan Holtom

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/jh

This is a renewal of Title V air operation permit No. 0630058-005-AV (effective March 16, 2011), the first draft of which was concurrently processed with air construction permit No. 0630058-019-AC. Permit No. 0630058-019-AC was an after-the-fact facility-wide construction permit that superseded all previously issued air construction permits to reflect the current facility configuration, operational design and new emission factors from the recent testing performed at the site. Pellet production is limited to 821,833 tons of pellets per rolling 12-months to avoid PSD review (from the production increase authorized by permit No. 0630058-011-AC) by limiting the potential increase of VOC to less than 250 tons per year (source obligation). Permit No. 0630058-019-AC also established the facility as an existing PSD major source. Any future permit actions must include and document an evaluation of the net emissions increases and applicability of NSR (New Source Review)/PSD with respect to the NSR significant emissions increase rates. This permit renewal also incorporates specific conditions from permit No. 0630058-021-AC, which authorized the replacement of two carbonaceous fuel boilers subject to the provisions of 40 CFR 60, Subpart Db with two new 8.4 MMBtu/hr natural gas-fired boilers subject to 40 CFR 63, Subpart DDDDD.

Subsection A. Facility Description.

This is a wood fuel pellet manufacturing facility, comprised of a wood fiber receiving and storage area, two dryer lines, three pelletizing lines, and a pellet load-out area. Wood fiber, in the form of pulpwood round wood logs, dry wood chips or sawmill residuals, is unloaded and stored. Logs are debarked and stored; bark is hammer-milled, screened and stored. All stored piles are conveyed for raw material and/or fuel. The ground wood is compressed into wood pellets. The finished pellets are loaded into railcars for shipment to customers.

The wood fiber receiving and storage area (EU 001) begins with wood fiber being trucked to the site as tree-length pulpwood logs (over 90% yellow pine) or sawmill residuals (chips, sawdust, shavings). Site traffic travels on paved roadways to the wood fiber receiving area. All incoming trucks are weighed using on site truck scales. Log trucks are unloaded with mobile equipment, stored as whole logs and, as needed, debarked, and chipped, then stored with incoming green residual chips. Stacked logs are stored on site for use during weather events and other logging curtailments. The bark removed from the round wood is stored in the fuel pile with purchased wood fuel chips. Sawmill residuals, primarily composed of wood shavings and dry wood chips, are delivered to the Dry Wood Truck Dump. The automated Dry Wood Truck Dump directly feeds dry wood chips to the Dry Wood Storage Bin located between the dryer and hammermills. As the sawmill residuals are already dried, they can be metered into the process prior to the hammermills, bypassing the Dryer Lines and allowing for production flexibility.

Logs are removed from the storage piles by mobile handing equipment, and grapple fed into a single rotary drum debarker, which removes the tree bark as the logs flow through the drum. A drum chipper chips the logs to a very uniform size under 3/8" dimension.

Bruks-Klockner Tubulator belt conveyors are used for chip conveyance. Chips exiting the chipper are conveyed up to the chip storage stacker and reclaimer. Chip storage has one stacker conveyor and one inclined reclaimer conveyor. Chips are deposited via belt conveyor on the pile top radius opposite the reclaimer. Reclaim of the chips is accomplished with an inclined surface scraper reclaimer. Stacker and reclaimer conveyors pivot around the pile radius to properly inventory the chips and manage on a first in/first out basis. Six days of chip inventory (approximately 20,000 tons) will be stored in the pile to allow for logging delays and equipment upsets. Reclaimed chips are conveyed using belt conveyors to the Dryer Metering Bin.

Bark from the drum debarker is conveyed via belt conveyor up to the bark screen and hog. An electric-powered hammer mill is used to reduce the bark to manageable sizes (minus 2 1/2" dimension) for best fuel handling and combustion. Bark fuel is conveyed via enclosed belt conveyors to the bark sand screen. Fines (i.e., sand) are removed from the bark fuel, to improve combustion efficiency and avoid the deposit of incombustible fly ash in the dry wood chips. Clean bark fuel is conveyed to the fuel storage stacker and reclaimer and managed on a first in/first out basis. A bark fuel supply of six days (approximately 5,000 tons) is maintained.

Dryer Line Nos. 1 and 2 each consist of a bark-fired furnace, a rotary drum dryer, a cyclone, a wet electrostatic precipitator (WESP), and a regenerative thermal oxidizer (RTO). Each Dryer Line utilizes an 18 foot x 80 foot Rotary Drum Dryer, manufactured by TSI, Inc., to dry the wood chips to 9% moisture content in preparation for grinding and pelletizing. The maximum heat input rate of each dryer is 151 million British thermal units per hour

(MMBtu/hr) on a 24-hour average basis, and 125 MM Btu/hr on an annual-average basis. Hot gases from the bark combustors are ducted directly to the Dryers. Each Combustor-Dryer system (Dryer Line) operates independently, sharing only the fuel feed system, chip delivery system and Wet Electrostatic Precipitator (WESP) water handling. Chips are delivered via belt conveyor to the common metering bin. Left and right metering mechanisms control the flow of the chips to each Dryer. The chips are dropped through a large six pocket airlock into the front of the Dryer.

Heat for the Chip Dryers is provided by two 151 MMBtu per hour bark fuel combustors, manufactured by the Teaford Company. These combustors have a modern reciprocating grate system for fuel spreading and controlled combustion. High humidity exhaust gases from the dryers are returned to the combustors' secondary combustion chamber, tempering the combustion and controlling the generation of NO_X. Construction permit No. 0630058-021-AC authorized the installation of two new 8.4 MMBtu per hour natural gas-fired steam boilers to replace two older steam generators which used a slip-stream of exhaust from the dryers. The new boilers were placed in the same location as the previously-existing steam generators on Dryer Line Nos. 1 and 2, emissions units (EU) 002 and 003. Flue gases from the new boilers are routed directly to the atmosphere. Steam is used to heat caustic solution used to clean the collection plates in the WESP, for soot blowing in the furnace, and to heat moisture-laden aspiration air from the hammer mills and pellet mills to prevent condensation in vents used to transport aspiration air back to the dryer furnaces. The new boilers are subject to regulation pursuant to 40 CFR 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

The products of combustion from each furnace are primarily exhausted to the rotary drum dryers to reduce the moisture content of wood chips conveyed from the wood chip pile. An induced draft carries all dried chips and hot air to a high efficiency material handling cyclone to remove the wood fiber.

Drying of the wood chips results in additional moisture, volatile organic compounds (VOC) and particulate matter (PM) being added to the air stream containing the hot products of combustion from the furnace. Up to 50% of the exhaust gases from the cyclone, depending on operating conditions (i.e., ambient temperature, initial moisture content of the wood, relative humidity, ability to maintain the temperature of the dryer), may be recirculated to the front of the dryer. The remainder of the exhaust gases are directed to the cyclone for separation of the dried wood chips from the smaller particulate and then to the WESP for PM control, and subsequently to the RTO for VOC control. Exhaust gases from the RTO are then released to the atmosphere from the RTO stack. The purpose of the WESP is to remove particulate matter (PM) from the exhaust gases from the dryer and protect the RTO from plugging of its ceramic media. Dried wood chips are stored in a concrete silo, waiting to be ground by the dry hammer mills.

Emissions from the hammer mill aspiration systems and pellet mill aspiration systems are recycled back through the furnace burners as combustion air and join the exhaust gas flow described above, being vented through the cyclone, WESP, and RTO. The hammer mill and pellet mill aspiration systems may be vented to the atmosphere for short periods of time; estimated to be less than 360 hours per year during instances when one dryer furnace is not operating.

Exhaust gas recirculation is used to temper the incoming gases. A Dryer inlet temperature of less than 950ºF is maintained to reduce the risk of fires, improve the moisture uniformity and control the emission of pollutants. The high humidity and low oxygen content of the resultant dryer gas stream is very useful in drying control and safety. Wood chips and residuals are conveyed through the dryer drum by the mechanical action of internal flighting and by pneumatic transport as the chips dry and become lighter. At the Dryer outlet, the chips are drawn up to the Dryer Cyclone. Sealed and insulated 75" diameter ducting connects the Dryer discharge with a high efficiency cyclone and a Dryer Induced Draft fan. At the Dryer drum discharge, the dry chips are pneumatically conveyed in the lower temperature gas stream up to the Cyclone inlet near the top. Each dryer has one high efficiency cyclone for chip separation and one Induced Draft Dryer Fan.

Excess water from the WESP is used for ash wetting, combustion control and fuel adjustment in the bark fuel combustors and is collected and taken off-site.

Clean gas exiting the WESP is routed to a Regenerative Thermal Oxidizer (RTO), reducing VOC emissions by 95%. Propane gas and natural gas are used as supplemental fuels to maintain RTO efficiency. Clean gases are exhausted to the atmosphere through a 75 foot high RTO exhaust stack for each Dryer Line.

The Pelletizing Lines 1, 2 and 3 (EUs 004, 005 and 006) equipment is manufactured by Buhler, Inc. of Switzerland. Dry wood chips are conveyed by a sealed chain conveyor to a dry chip storage bin, with a capacity of approximately 300 tons of dry chips. The dry chip storage bin allows for moisture content equalization (9%).

Dry chips are metered into Pelletizing Lines 1, 2 and 3. Sealed chain conveyors transport dry chips from the Dry Chip Storage Bin up into the Hammer Mill Building. All chain conveyors are sealed with continuous air aspiration for dust and fire control. All aspirated air is drawn through Buhler dust filters with an air to cloth ratio lower than 15 actual cubic feet per minute per square feet (ACFM per SF). All material handling of the wood chips and pellets is accomplished mechanically with sealed chain conveyors and augers. Wood dusts collected by the dust filters are directly deposited back into the process via airlocks.

Pelletizing Line 1 has nine vertical hammer mills. Pelletizing Line 2 has eleven vertical hammer mills. Pelletizing Line 3 has eight vertical hammer mills and one horizontal hammer mill. Each hammer mill is manufactured by Buhler, Inc., model Vertical Rotor DFZK-1. The hammer mills accurately grind the dry wood chips to under 4 mm (0.16") in size. The grinding and pelletizing process requires frequent scheduled replacement of machinery parts and dies to maintain critical process tolerances. The 28 vertical hammer mills allow for reliable production without variation due to scheduled hammer mill downtime. The horizontally-oriented, rotor-type hammer mill, manufactured by Buhler, model DFZP-535 HP, can operate continuously as part of Pelletizing Line No. 3.

The ground wood fiber is conveyed to three sealed storage and metering bins each with a capacity of approximately 40 tons. A ventilation system in the grinding and pellet storage bins helps minimize condensation. These bins provide equalization time and surge capacity for machinery downtime. Steam used to be applied to soften the wood fiber as it is drawn into a pellet mill but it is no longer used to soften the wood. The wood fiber is compressed by the pellet mill rotating press rolls, exiting through the sizing die. The resultant heat of friction activates the wood lignin as the wood is compressed, effectively bonding the wood fiber into a durable pellet. This raises the pellet temperature in excess of 80ºC (180ºF) and eliminates any need for adhesives or bonding agents. PM emissions are controlled by two cyclones and fabric filters for each Pelletizing Line. With permit No. 0630058-014-AC, all hammer mill and pellet mill aspiration systems were routed to existing Dryer Furnaces 1 and 2, which exhaust to the WESPs and RTOs. The facility found it necessary for instances when one dryer is not operating that the remaining dryer could not handle the total aspiration system flow. Enviva reported during the permit renewal 020-AV that the hammer mill and pellet mill aspiration systems are vented to the atmosphere for short periods of time; estimated to be less than 360 hours per year during instances when one dryer furnace is not operating. This practice had been started when the aspiration system was routed to the furnaces. During normal operation, all of the flow from the hammer mill and pellet mill aspiration systems are directed to the dryer furnaces as required by permit No. 0630058-014-AC, effective August 12, 2013. Permit No. 0630058-019-AC accommodates that need and allows the aspiration systems to be vented to the atmosphere for no more than 360 hours per year.

Pellets exiting the pellet mills are conveyed via sealed chain conveyor to a counter flow pellet cooler, manufactured by Geelen Counterflow of the Netherlands. Each Pelletizing Line has a Pellet Cooler, twin cyclones, single ID fan and an exhaust stack. Pellet cooling reduces the risk of spontaneous combustion. Each cooler uses counter-flow outside air, drawn into the pellet discharge bottom of the cooler, to rapidly cool the pellets to 10ºF above ambient air temperature and dry the pellets, losing 1 to 2% moisture content. Cooler exhaust has an air volume of 36,820 ACFM at 160ºF. Hot exhaust air from the pellet cooler is ducted to two parallel high efficiency cyclones. These cyclones remove 90% of any entrained PM in the exhaust air. Collected wood dust is discharge via a bottom airlock directly to the sealed chain conveyor delivering wood fiber to the pellet mills. Entrained dust is expected to be coarser wood dust with moderate loadings due to the slow mechanical handling and transport of the finished pellets. The pellets are not subjected to aggressive tumbling or pneumatic transport that could result in dust generation. Pellet cooler exhaust air is ducted from the cyclones to the induced draft fan and discharged through a 74-foot stack.

In the Bulk Load-Out Area (EU 007), pellets exit the counterflow pellet cooler to sealed chain conveyors and are transported to two storage bins above the two rail car loading area. Each bin has a capacity of 94 tons. The bins provide up to about two hours of pellet storage and uniformly meter the pellets out for rail car loading. All conveyors are sealed with dust aspiration air directed to a Buhler dust filter system.

	ESTIMATED POLLUTANTS (Tons per Year)				
PROCESS AREA	**PM/PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2**
Wood Fiber Receiving & Storage Area	101.5/20.3[2]	NA	NA	NA	NA
Dryer Lines 1 & 2	39.8[3]	245.3	22.3	136.4	27.4[1]
Pelletizing Lines 1, 2, & 3 Cooler Stacks	204.4	NA	NA	381	NA
Bulk Load-out Area	0.71	NA	NA	NA	NA
TOTAL	243.1	245.3	22.3	517.2	27.4

[1] SO_2 potential emission estimates are based on wood firing. SO_2 emissions did not increase. The emissions were incorrect in previous permits.
[2] Wood Fiber fugitives, 32.8 ton per year PM_{10} and 168.3 tons per year PM, are not included in Facility totals.
[3] PM based on emission rates from the manufacturer and not on the 0.030 lb PM/MMBtu NSPS Db limit.
[4] Includes 23.2 tons per year of VOC and 0.41 tons per year PM for aspiration system venting (360 hours) to the atmosphere

Enviva reported during the permit renewal that the hammer mill and pellet mill aspiration systems are vented to the atmosphere for short periods of time (less than 360 hours per year) during instances when one dryer furnace is not operating. During normal operation, all of the hammer mill and pellet mill aspiration systems are exhausted to the dryer furnaces as authorized by permit No. 0630058-014-AC, effective August 12, 2013.

Subsection B. Summary of Emissions Units.

EU No.	Brief Description
Regulated Emissions Units	
001	Wood Fiber Receiving and Storage Area
002	Dryer Line 1
003	Dryer Line 2
004	Pelletizing Line 1
005	Pelletizing Line 2
006	Pelletizing Line 3
007	Bulk Load-out Area
009	Green Wood Chip Grinding System and later Dryer Line 3 *{both were not installed}*
010	Emergency Fire Pump Engine (CI-ICE)
012	Two Natural Gas-fired Boilers
Unregulated Emissions Units and Activities (see Appendix U, List of Unregulated Emissions Units and/or Activities)	
011	Diesel Fuel Storage Tank *{previously EU008 but changed because EU008 was a Green Wood Chip Grinding System that was never installed}*

Also included in this permit are miscellaneous insignificant emissions units and/or activities (see Appendix I, List of Insignificant Emissions Units and/or Activities).

Subsection C. Applicable Regulations.

Based on the Title V air operation permit renewal application received August 4, 2015, this facility is a major source of hazardous air pollutants (HAP). The Department determined that the facility became a major stationary source for HAPs with the expansion and increase in production authorized by construction permit No. 0630058-011-AC.

Upon original construction, this facility was not considered a major stationary source for PSD because based on the knowledge at that time, the existing potential emissions of any pollutant did not exceed the 250 tons per year threshold. The original owner (Green Circle Bio Energy) tested soon after its construction in 2007 and VOC emissions after the dryers were found to be below PSD thresholds. Accordingly, the facility did not have a BACT (Best Achievable Control Technology) determination (no modeling) but there are BACT level pollution controls (Dryer Line Furnaces with 90% VOC destruction efficiency and then to cyclones and WESPs with 97% PM removal efficiency and finally to the RTOs with 95% VOC destruction efficiency).

Permit No. 0630058-014-AC authorized the routing of the hammer mill and pellet mill aspiration systems to the Dryer Line Furnaces after stack testing initiated by the permittee for the hammer mill and pellet mill aspiration systems, and pellet mill 2 pellet cooler cyclone exhaust revealed large amounts of VOC were being emitted from these emissions points.

Project No. 0630058-011-AC did not trigger a PSD preconstruction review because at that time the facility was classified as a minor stationary source for PSD and potential emissions increases as they were known at that time from the proposed project were less than 250 tons per year. The facility was to be categorized as a major stationary source for PSD with respect to NO_X and VOC after the construction and increased pellet production occurred with permit No. 0630058-011-AC. The third dryer line that was authorized by permit No. 0630058-011-AC was never constructed, but the pellet production has been increased.

The after-the-fact construction permit, 019-AC, limits pellet production to 821, 833 tons of pellets per rolling 12-months to avoid PSD review by limiting the potential increase of VOC from the production increase authorized by permit No. 0630058-011-AC to less than 250 tons per year (source obligation).

Permit 0630058-019-AC also establishes Enviva as a major stationary PSD source with potential emissions based on the design capacity of the emissions units as currently configured. Any future projects will be subject to New Source Review (NSR).

A summary of applicable regulations is shown in the following table.

Regulation	EU No(s).
Federal Rule Citations	
40 CFR 60, Subpart A, New Source Performance Standards (NSPS) General Provisions	010
40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition (CI) Combustion Engines	010
40 CFR 63, Subpart A - General Provisions	012
40 CFR 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	012
State Rule Citations	
62-296.410, Carbonaceous Fuel Burning Equipment	002, 003

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The following conditions apply facility-wide to all emission units and activities:

FW1. Appendices. The permittee shall comply with all documents identified in Section IV, Appendices, listed in the Table of Contents. Each document is an enforceable part of this permit unless otherwise indicated. [Rule 62-213.440, F.A.C.]

Emissions and Controls

FW2. Not federally Enforceable. Objectionable Odor Prohibited. No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rule 62-296.320(2) and 62-210.200(Definitions), F.A.C.]

FW3. General Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C., and Permit 0630058-019-AC]

{Permitting Note: Nothing is deemed necessary and ordered at this time.}

FW4. General Visible Emissions. No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20% opacity. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b), F.A.C.]

FW5. Unconfined Particulate Matter. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction; alteration; demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:

a. Paving and maintenance of roads, parking areas and yards.
b. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
c. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles, and similar activities.
d. Removal of particulate matter (PM) from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment and from buildings or work areas to prevent particulates from becoming airborne.
e. Landscaping or planting vegetation.
f. Use of hoods, fans, filters, and similar equipment to contain, capture, and/or vent PM.
g. Confining abrasive blasting where possible.
h. Enclosure or covering of conveyor systems.

[Rule 62-296.320(4)(c), F.A.C.; and, proposed by applicant in Title V air operation permit renewal application received August 4, 2015.]

Reports and Fees

See Appendix RR, Facility-wide Reporting Requirements for additional details.

FW6. Electronic Annual Operating Report and Title V Annual Emissions Fees. The information required by the Annual Operating Report for Air Pollutant Emitting Facility [Including Title V Source Emissions Fee Calculation] (DEP Form No. 62-210.900(5)) shall be submitted by April 1 of each year, for the previous calendar year, to the Department of Environmental Protection's (DEP) Division of Air Resource Management. Each Title V source shall submit the annual operating report using the DEP's Electronic Annual Operating Report (EAOR) software, unless the Title V source claims a technical or financial hardship

by submitting DEP Form No. 62-210.900(5) to the DEP Division of Air Resource Management instead of using the reporting software. Emissions shall be computed in accordance with the provisions of subsection 62-210.370(2), F.A.C. Each Title V source must pay between January 15 and April 1 of each year an annual emissions fee in an amount determined as set forth in subsection 62-213.205(1), F.A.C. The annual fee shall only apply to those regulated pollutants, except carbon monoxide and greenhouse gases, for which an allowable numeric emission-limiting standard is specified in the source's most recent construction permit or operation permit. Upon completing the required EAOR entries, the EAOR Title V Fee Invoice can be printed by the source showing which of the reported emissions are subject to the fee and the total Title V Annual Emissions Fee that is due. The submission of the annual Title V emissions fee payment is also due (postmarked) by April 1st of each year. A copy of the system-generated EAOR Title V Annual Emissions Fee Invoice and the indicated total fee shall be submitted to: **Major Air Pollution Source Annual Emissions Fee, Post Office Box 3070, Tallahassee, Florida 32315-3070.** Additional information is available by accessing the Title V Annual Emissions Fee On-line Information Center at the following Internet web site: http://www.dep.state.fl.us/air/emission/tvfee.htm. [Rules 62-210.370(3), 62-210.900 & 62-213.205, F.A.C.; and, §403.0872(11), Florida Statutes (2013)]

{Permitting Note: Resources to help you complete your AOR are available on the electronic AOR (EAOR) website at: http://www.dep.state.fl.us/air/emission/eaor. If you have questions or need assistance after reviewing the information posted on the EAOR website, please contact the Department by phone at (850) 717-9000 or email at eaor@dep.state.fl.us.}

{Permitting Note: The Title V Annual Emissions Fee form (DEP Form No. 62-213.900(1)) has been repealed. ***A separate Annual Emissions Fee form is no longer required to be submitted by March 1st each year.****}*

FW7. Annual Statement of Compliance. The permittee shall submit an annual statement of compliance to the compliance authority at the address shown on the cover of this permit and to the US. EPA at the address shown below within 60 days after the end of each calendar year during which the Title V air operation permit was effective. (See also Appendix RR, Conditions RR1 and RR7.) [Rules 62-213.440(3)(a)2. & 3. and (b), F.A.C.]

U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303
Attn: Air Enforcement Branch

FW8. Prevention of Accidental Releases (Section 112(r) of CAA). If, and when, the facility becomes subject to 112(r), the permittee shall:

a. Submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent electronically through EPA's Central Data Exchange system at the following address: https://cdx.epa.gov. Information on electronically submitting risk management plans using the Central Data Exchange system is available at: http://www2.epa.gov/rmp. The RMP Reporting Center can be contacted at: RMP Reporting Center, Post Office Box 10162, Fairfax, VA 22038, Telephone: (703) 227-7650.
b. Submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68]

FW9. Semi-Annual Reports. The permittee shall monitor compliance with the terms and conditions of this permit and shall submit reports at least every six months to the compliance office. Each semi-annual report shall cover the 6-month periods of January 1 – June 30 and July 1 – December 31. The reports shall be submitted by the 60th day following the end of each calendar half (i.e., March 1st and August 29th of every year). All instances of deviations from permit requirements (including conditions in the referenced

Appendices) must be clearly identified in such reports, including reference to the specific requirement and the duration of such deviation. If there are no deviations during the reporting period, the report shall so indicate. Any semi-annual reporting requirements contained in applicable federal NSPS or NESHAP requirements may be submitted as part of this report. The submittal dates specified above shall replace the submittal dates specified in the federal rules. All additional reports submitted as part of this report should be clearly identified according to the specific federal requirement. All reports shall include a certification by a responsible official, pursuant to subsection 62-213.420(4), F.A.C. (See also Conditions RR2. – RR4. of Appendix RR, Facility-wide Reporting Requirements, for additional reporting requirements related to deviations.) [Rule 62-213.440(1)(b)3.a., F.A.C.; and, 40 CFR 60.19, 40 CFR 61.10 & 40 CFR 63.10]

{Permitting Note: EPA has clarified that, pursuant to 40 CFR 70.6(a)(3), the word "monitoring" is used in a broad sense and means monitoring (i.e., paying attention to) the compliance of the source with <u>all</u> emissions limitations, standards, and work practices specified in the permit.}

<u>Other Requirements</u>

FW10. <u>Facility-wide VOC Emissions Recordkeeping</u>. Recordkeeping and reporting shall be used in addition to emissions testing for ensuring compliance. Emissions shall be determined using the most conservative emissions factors from emissions testing, manufacturer's guarantee, and/or AP-42 emissions factors. Monthly records shall be maintained of the facility-wide VOC emissions and the owner/operator shall calculate the facility-wide VOC emissions for each consecutive 12-month rolling total period by the end of each month. These records shall be made available to the Department upon request. Additionally, a summary shall be filed with each semiannual report for each consecutive 12-month rolling period. [Rule 62-4.070(3), F.A.C.; Source Obligation; and, Permit No. 0630058-019-AC]

FW11. <u>Actual Emissions Reporting</u>. Permit No. 0630058-021-AC was based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C., for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit. A **Project Actual Emissions Tracking Sheet** is attached in the Appendices as an example.
b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 5-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:
   (1) The name, address and telephone number of the owner or operator of the major stationary source;
   (2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;
   (3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and
   (4) Any other information that the owner or operator wishes to include in the report.
c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

For this project, the permit requires the annual reporting of actual PM_{10} and $PM_{2.5}$ emissions for the following units: EU001, EU002, EU003, EU004, EU005, EU006, EU007, and EU012. [Rules 62-212.300(1)(e) & 62-210.370, F.A.C.; and, Permit No. 0630058-021-AC]

{Permitting Note: The baseline actual emissions for project 0630058-021-AC are shown below.}

Pollutant	Annual Emissions, Tons/Year					PSD SER exceeded?
	Baseline Actual	Projected Actual	Excluded Could Have Accommodated	Increase	Significant Emissions Rate (SER)	
CO	16.04	23.29	N/A	7.25	100	No
NO_X	84.20	91.79	N/A	7.58	40	No
PM	207.39	274.71	54.78	12.56	25	No
PM_{10}	162.58	226.15	54.06	9.51	15	No
$PM_{2.5}$	154.13	217.01	53.95	8.94	10	No
SO_2	25.74	27.42	N/A	1.67	40	No
VOC	439.05	460.98	4.57	17.36	40	No

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Subsection A. Emissions Unit 001 Wood Fiber Receiving and Storage Area

The specific conditions in this section apply to the following emissions unit:

EU No.	Brief Description
001	Wood Fiber Receiving and Storage Area

Wood fiber (round wood, wood chips and sawmill residuals) is unloaded and stored. Round wood is delivered by truck, stored as whole logs and, as needed, debarked, and chipped, then stored with incoming green residual chips also delivered by truck. The bark removed from the round wood is stored in the fuel pile with purchased wood fuel chips. Conveyors are used to transport wood chips and bark to the dryers and furnaces, respectively.

Sawmill residuals, primarily composed of wood shavings and dry wood chips, are delivered by truck to the Dry Wood Truck Dump. From the Dry Wood Truck Dump, the sawmill residuals are conveyed to the Dry Wood Storage Bin which is located between the dryers and hammer mills. The sawmill residuals are already dried so they can be metered into the process prior to the hammer mills, bypassing the dryers, allowing for production flexibility.

A new Dry Chip Silo was authorized with Permit 0630058-011-AC and has been constructed. Previous permit limits on the maximum allowable number of trucks per day and the requirement to record and maintain the daily number of trucks that deliver wood fiber and sawmill residual were removed with Permit 0630058-011-AC.

Essential Potential to Emit (PTE) Parameters

A.1. Hours of Operation. This emissions unit may operate continuously (8,760 hours/year). [Rule 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging time for the Specific Condition below is based on the specified averaging time of the applicable test method.

{Permitting Note: This emissions unit is subject to the General Visible Emissions Standards of Rule 62-296.320(4)(b), F.A.C. and may be required to test for visible emissions by the Department. See Section II, Facility-wide Conditions.}

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

A.2. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources *{when required}*

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C.; 40 CFR 60 Appendix A]

A.3. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

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Subsection B. Emissions Unit 002 and 003, Dryer Lines 1 & 2

The specific conditions in this section apply to the following emissions unit(s):

EU No.	Brief Description
002	Dryer Line 1
003	Dryer Line 2

Each Dryer Line consists of a bark-fired furnace that exhausts into a rotary drum dryer, a cyclone, a wet electrostatic precipitator (WESP), and a regenerative thermal oxidizer (RTO). The maximum design heat input rate of each dryer is 151 million British thermal units per hour (MMBtu/hr) on a 24-hour average basis, and 125 MMBtu/hr on an annual-average basis.

Exhaust gases from each bark-fired furnace are primarily directed to their respective dryer for the purpose of reducing the moisture content of wood chips, conveyed from the wood chip pile. An induced draft carries dried chips and hot air to a high efficiency material handling cyclone for separation of the dried wood chips from the smaller particulate. Drying of the wood chips results in additional moisture, volatile organic compounds (VOC) and particulate matter (PM) being added to the air stream containing the hot products of combustion from the furnace. Up to 50% of the exhaust gases from the dryer, depending on operating conditions (i.e., ambient temperature, initial moisture content of the wood, relative humidity, ability to maintain the temperature of the dryer), may be recirculated back to the inlet of the dryer(s). The non-recirculated portion of the dryer exhaust is directed to the cyclone(s) and then to the WESP(s) for PM control, and subsequently to the RTO(s) for VOC control. The WESP(s) removes particulate matter (PM) which protects the RTO(s) from plugging its ceramic media. Exhaust gases from each RTO(s) are then released to the atmosphere from a stack (one stack for each RTO). Each dryer includes two additional stacks used during bypass operations.

Bypass stacks D1-2 for Dryer Line 1 and D2-2 for Dryer Line 2 exhaust from the wood chip dryer and bark fuel combustor, respectively, for each Dryer Line during startups (for temperature control) and malfunctions, but not more than a total of 50 hours per year. Each furnace can operate up to 1,500 hours per year in malfunction "idle mode" (defined as operation at up to a maximum heat input rate of 5 MMBtu/hr) using bypass stacks D1-1 and D2-1 for dryer line furnaces 1 and 2, respectively. The purpose of operation in "idle mode" is to maintain the temperature of the fire brick lining the furnaces which may be damaged if it cools too rapidly. Operation in "idle mode" also significantly reduces the amount of time required to restart the dryers once downstream issues are resolved. Each Combustor has a bypass for emergencies, identified as Combustor 1 Bypass Stack and Combustor 2 Bypass Stack.

The Department determined that with the expansion and increase in production authorized by permit No. 0630058-011-AC, the facility became a major stationary source for hazardous air pollutants (HAPs). Because EPA determinations have stated that the EPA did not include dryer/steam generator systems similar to those at the facility in developing 40 CFR 63, Subpart DDDDD, the Department believes that 40 CFR 63, Subpart DDDDD and similarly 40 CFR 63, Subpart JJJJJJ (Boiler MACT) were not intended to regulate, and are not applicable to, the dryer systems at the facility (see TEPD from permit No. 0630058-019-AC for details).

As currently permitted, the dryer lines are not subject to the Compliance Assurance Monitoring (CAM) requirements imposed by 40 CFR 64, because CAM only applies to emissions units that must use a control device to achieve compliance with a specific emissions limit. The facility made the case that the WESPs (wet electrostatic precipitators) may be considered inherent process equipment rather than control devices, because their primary purpose is to remove PM to protect the RTOs' (regenerative thermal oxidizers) heat exchange media from plugging. Monitoring requirements have been placed in this permit to include manufacturer's recommended operations of the WESPs and RTOs (including recommendations on media replacement). CAM applicability will be revaluated during the Title V air operation permit revision following the pending PSD permit. CAM no longer applies to the RTOs for VOC control because the dryers have no emissions-unit specific limits for VOC. Previous VOC limits were removed by permit No. 0630058-019-AC, because the facility is now recognized as an existing major stationary source for PSD consideration and thus the VOC limits are no longer relevant to escape PSD.

Essential Potential to Emit (PTE) Parameters

B.1. Permitted Capacity. The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu per hour heat input averaged annually and 151 MMBtu per hour averaged over a 24-hour period. [Permit No. 0630058-019-AC]

B.2. Hourly Production Capacity for Testing Only. For testing purposes only, the combined hourly pellet production testing capacity shall be 121 tons of pellets per hour, measured at the Pellet Bulk Loadout, during testing. The averaging time(s) for the maximum operating rate for the dryer lines' compliance testing shall be based on the specified averaging time of the applicable test method. [Permit No. 0630058-019-AC]

{Permitting Note: During compliance testing, the maximum pellet loadout rate shall be achieved solely through the pelletizing of chips processed through the dryers. No dried chips shall be introduced to the pelletizers from the dry chip storage bins during the compliance testing periods.}

B.3. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(3), F.A.C.]

B.4. Methods of Operation - Fuel. The combustors for Dryer Lines 1 and 2 shall be fired with carbonaceous fuel only. [Rules 62-213.410, F.A.C.; Applicant's request in Title V permit renewal application received August 5, 2015; and, Permit No. 0630058-019-AC]

B.5. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200(PTE), F.A.C.; and, Permit No. 0630058-019-AC]

B.6. Wet Electrostatic Precipitators (WESP) Quenching. The maximum dryer outlet/pre-quench temperature shall not exceed 375°F averaged over one hour. The WESP inlet and outlet gas stream quench temperatures shall not exceed 210°F, averaged over one hour. [Permit No. 0630058-019-AC]

B.7. Regenerative Thermal Oxidizer (RTO) Combustion Chamber Temperature. The RTO for each Dryer Line shall be operated using propane or natural gas, with a combustion chamber temperature of no less than 1,440°F, averaged over three hours. [Permit No. 0630058-019-AC]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging times for the following emissions standards are based on the specified averaging time of the applicable test method.

B.8. Visible Emissions (VE). Visible emissions from each dryer line shall not exceed the following:

a. *State Limit*. 30 percent opacity, except that visible emissions not exceeding 33 percent opacity shall be allowed for one six-minute period in any one-hour period.

b. *Applicant Requested Limit*. 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity.

The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. [Rule 62-296.410(2)(b)1., F.A.C.; and, Permit No. 0630058-019-AC]

B.9. Particulate Matter. Particulate matter (PM) emissions from each Dryer Line shall not exceed the following:

a. *State Carbonaceous Fuel Burner Standard*. 0.2 pounds per million Btu of heat input of carbonaceous fuel. [Rule 62-296.410(2)(b)2., F.A.C.]

b. *Manufacturer's Guarantee*. Because the dryer lines are no longer subject to 40 CFR 60, Subpart Db, PM emissions shall not exceed 3.0 pounds PM per hour. [Rule 62-4.070(3), F.A.C.; Permit No. 0630058-019-AC]

{Permitting Note: The PM limit of 0.2 lb/MMBtu from Rule 296.410(2)(b)2. is less stringent than the manufacturer's guarantee of 3.0 pounds per hour per dryer. To provide reasonable assurance of proper

operation of the pollution control equipment (wet ESP and RTO) and to avoid an increase in actual emissions, pursuant to Permit No. 0630058-019-AC, the PM limit shall be based on the manufacturers guarantee since 40 CFR 60, Subpart Db no longer applies.}

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an NSPS or NESHAP.

B.10. Excess Emissions Allowed. Excess emissions resulting from startup, shut down or malfunction using Dryer Line Bypass stacks (Bypass stacks D1-2 and D1-1 for Dryer Line 1, and D2-2 and D2-1 for Dryer Line 2) shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period nor exceed 50 hours per 12-month rolling total for each Dryer Line. [Rule 62-210.700(1), F.A.C.; and, Permit No. 0630058-019-AC]

B.11. Malfunction Idle. Each furnace is allowed to operate up to 1,500 hours per year in malfunction "idle mode" (defined as operation at up to a maximum heat input rate of 5 MMBtu/hr) using bypass stacks D1-1 and D2-1 for dryer line furnaces 1 and 2, respectively. [Permit No. 0630058-019-AC]

Monitoring of Operations

B.12. WESP and RTO Inspections. Inspections and maintenance of both ESPs and RTOs shall be performed as recommended by the manufacturer at least annually, at a minimum. This shall include inspection of the RTO media bed and any required cleaning, maintenance or replacement of the media as required to ensure proper operation. [Permit No. 0630058-019-AC]

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

B.13. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
5 or 17	Method for Determining Particulate Matter Emissions (All PM is assumed to be PM_{10}.)
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)
18 and 25A	Method for Determining Gaseous Organic Concentrations (Flame Ionization)

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C.; 40 CFR 60 Appendix A]

B.14. Common Testing Requirements. The permittee shall notify the Compliance Authority in writing at least 30 days prior to any required tests. Notification may be sent via e-mail to nwdair@dep.state.fl.us. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. For each test run, the report shall also indicate the dryer combustor heat input, the dryer line WESP inlet and outlet gas stream quench temperatures, the secondary current and secondary voltage, dryer outlet/pre-quench temperature, and the dryer line

regenerative thermal oxidizer (RTO) combustion chamber temperature measured during the tests. [Rules 62-297.310(9) & (10), F.A.C.; and, Permit No. 0630058-019-AC]

B.15. Compliance Tests Prior To Renewal. Except as provided in subparagraph 62-297.310(8)(b)3., F.A.C. (see condition **TR7.**b.(3) in Appendix TR – Facility-wide Testing Requirements), the owner or operator shall conduct subsequent performance tests of the Dryer Line 1 Exhaust Stack and Dryer Line 2 Exhaust Stack prior to obtaining a renewed operation permit to demonstrate compliance with the emission limits for PM. The testing shall be completed before the permit renewal application due date so that the results can be submitted with the application. The following procedures and reference methods shall be used:

a. Method 3A or 3B of appendix A-2 of 40 CFR 60 is used for gas analysis when applying Method 5 of appendix A-3 of 40 CFR 60 or Method 17 of appendix A-6 of 40 CFR 60
b. Method 5 or 17 of appendix A of 40 CFR 60 shall be used to measure the concentration of PM as follows:
   (1) Method 5 of appendix A shall be used at affected facilities without wet flue gas desulfurization (FGD) systems; and
   (2) Method 17 of appendix A-6 may be used at facilities with or without wet scrubber systems provided the stack gas temperature does not exceed a temperature of 160 °C (320 °F).
c. Method 1 of appendix A of this part is used to select the sampling site and the number of traverse sampling points. The sampling time for each run is at least 120 minutes and the minimum sampling volume is 1.7 dscm (60 dscf) except that smaller sampling times or volumes may be approved by the Administrator when necessitated by process variables or other factors.
d. For Method 5, the temperature of the sample gas in the probe and filter holder is monitored and is maintained at 160±14 °C (320±25 °F).
e. For determination of PM emissions, the oxygen (O_2) or CO_2 sample is obtained simultaneously with each run of Method 5 or 17 by traversing the duct at the same sampling location.
f. For each run using Method 5 or 17, the emission rate expressed in ng/J heat input is determined using:
   (1) The O_2 or CO_2 measurements and PM measurements obtained under this section;
   (2) The dry basis F factor; and
   (3) The dry basis emission rate calculation procedure contained in Method 19 of appendix A of 40 CFR 60.
g. Method 9 of appendix A of 40 CFR 60 is used for determining the opacity of stack emissions.

[Rules 62-210.300(2)(a), 62-296.410(3)(a) & (b), & 62-297.310(8)(b); and, 40 CFR 60 Appendix A]

{Permitting Note: Tests which are only required once during the term of a permit prior to obtaining a renewed permit should be performed roughly five years from the previous test.}

B.16. VOC and NO_x Tests. Tests shall also be performed for NO_x and VOC to verify emissions estimates prior to obtaining each renewed operation permit. The testing shall be completed before the permit renewal application due date so that the results can be submitted with the application. The tests shall be performed in accordance with the reference methods 7E, 18 and 25A as described in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800. VOC shall be reported as propane. [Rules 62-213.440(1) & 62-297.310(8)(b)1., F.A.C.; Appendix A of 40 CFR 60; and, Permit No. 0630058-019-AC]

Recordkeeping and Reporting Requirements

B.17. Operating Parameter Records. Records of the date, time, hours, total running hours, hourly WESP gas stream inlet and outlet quench temperatures, hourly dryer outlet/pre-quench temperature, secondary voltage and secondary current, and hourly RTO combustion chamber temperatures as a three-hour average shall be kept and made available upon request or during Department inspection. [Permit No. 0630058-019-AC]

B.18. ESP and RTO Inspection and Maintenance Records. The results of the inspections and maintenance on each of the ESPs and RTOs shall be maintained (in written or electronic format) and made available to the Department upon request. Records shall include the following:

a. Date and time of each record;
b. The results of each inspection;
c. The results of any maintenance performed; and,

d. Variance from manufacturer's recommendations, if any, and corrections made.
[Permit No. 0630058-019-AC]

B.19. Facility-wide VOC Emissions Recordkeeping and Reporting. See requirements in Section 2., Specific Condition **FW10.**, of this permit under Facility-Wide VOC Emissions Recordkeeping and Reporting. [Permit No. 0630058-019-AC]

B.20. Reporting Schedule. The following reports shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition(s)
Semiannual Monitoring Reports	Every 6 months	**FW9 and RR4**

[Rule 62-213.440(1)(b), F.A.C.]

B.21. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440(1)(b), F.A.C.]

B.22. Test Reports. The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. For each test run, the report shall also indicate the dryer line combustor heat input, secondary voltage and secondary current, the dryer line WESP inlet and outlet gas stream quench temperatures, the dryer outlet/pre-quench temperature, and the dryer line regenerative thermal oxidizer (RTO) combustion chamber temperature. [Rule 62-297.310(10), F.A.C.; and, Permit No. 0630058-019-AC]

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The specific conditions in this section apply to the following emissions units:

EU No.	Brief Description
004	Pelletizing Line 1
005	Pelletizing Line 2
006	Pelletizing Line 3 (includes one horizontal hammer mill)

Pelletizing Lines 1, 2 and 3, consist of hammer mills and pellets mills with a combined maximum process rate of 121 tons per hour for testing purposes (measured at the bulk load-out). Pelletizing Line 1 has nine vertical hammer mills. Pelletizing Line 2 has eleven vertical hammer mills. Pelletizing Line 3 has eight vertical hammer mills and one horizontal hammer mill. Dry wood chips (approximately 9 percent moisture, by weight), stored in the Grinding Storage Bin, and sawmill residuals from the Dry Wood Storage Bin are conveyed to the Grinding Building along three incline conveyors. From the incline conveyors, the wood chips are metered to three grinding infeed conveyors that feed the three hammer mill lines. The hammer mills accurately grind the dry wood chips to under 4 mm (0.16") in size. From the hammer mills, the ground wood fiber is conveyed to three sealed storage and metering bins each with a capacity of approximately 40 tons (Pelletizing Storage Bins).

The three conveyors exiting the hammer mill lines each have separate aspiration systems and separate dust collectors. These aspiration systems remove heated moist air from the hammer mills and also capture emissions of PM and VOC. For PM emissions control, these aspiration systems are vented to fabric filters, baghouses. For further PM emissions control and for VOC emissions control, the exhausts from these dust collectors are combined with the exhaust from similar aspiration systems servicing the pellet mills and vented to the dryer furnaces where they are subject to combustion in the furnaces, and the additional control afforded by a 50% recirculation system, WESP and RTO. The two steam generators that are part of the Dryer Lines are used to heat the aspiration system gas stream from the hammer mills and pellet mills to prevent condensation of VOCs in the duct.

Three incline conveyors are used to transport ground wood from the Pelletizing Storage Bins to the Pelletizing Building. From the incline conveyors, the ground wood is transferred to three conveyors that feed the three Pelletizing Lines. Pelletizing Line 1 has five pellet mills. Pelletizing Line 2 and 3 have six pellet mills each. In the pellet mills, wood fiber is compressed by rotating press rollers, exiting through a sizing die. The resultant heat of friction of compressing the wood through the die activates the wood lignin which effectively bonds the wood fiber into a durable pellet. Three conveyors are used to transport the pellets from the Pelletizing Lines to a bucket elevator. The aspiration systems for each pelletizing line are vented to their respective dust collectors. The exhaust from these dust collectors are vented back to the dryer furnaces and eventually through the RTO stacks, except for instances when one dryer furnace is not operating and the aspiration systems are vented to the atmosphere for short periods of time (less than 360 hours per year). Each bucket elevator is used to transfer the pellets to the top of a counter current flow Pellet Cooler. Each Pelletizing Line has a Pellet Cooler, twin cyclones (each cooler has two parallel high efficiency cyclones), a single ID fan and an exhaust stack. From the Pellet Coolers, the flows of pellets are fed to a single bucket elevator and vibrating screen. From the vibrating screens, the pellets are transferred to the railcar loading system. Pellets are transported to two storage bins, each with a capacity of 94 tons and located above the rail car loading area. The bins provide up to two hours of pellet storage and uniformly meter out the pellets for rail car loading. All conveyors are sealed with dust aspiration air directed to a Buhler dust filter system.

The horizontal hammer mill can operate 8,760 hours per year and is part of Pelletizing Line 3 (EU 006). Ten new horizontal hammer mills were never constructed. The existing pelletizing lines' aspiration dust collectors on each pelletizer line were never vented to the cooler's exhaust stream. The pellet mill coolers continue to vent to the twin cyclone systems and then to the atmosphere. VOC emissions from each Pellet Cooler are vented to the atmosphere without control.

Essential Potential to Emit (PTE) Parameters

C.1. Permitted Capacity – Hourly Capacity. For testing purposes only, the combined hourly pellet production for the Pelletizing Lines is 121 tons per hour, measured at the Pellet Bulk Loadout. The averaging time for the maximum operating rate for the Pelletizing lines' testing shall be based on the specified averaging time of the applicable test method. [Permit No. 0630058-019-AC]

C.2. Permitted Capacity - Annual Capacity. The maximum annual production of wood pellets for all three Pelletizing Lines combined shall be no more than 821,833 tons per rolling 12-months, measured at the bulk load-out. [Permit No. 0630058-019-AC]

C.3. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(3), F.A.C.]

C.4. Reduction of Pelletizing Lines Operating Rate. When one or more of the Dryer Line Furnaces is not able to process the exhaust from the VOC control air handling system, permittee will reduce the pelletizing lines' total processing rate to 60% (72 tons pellets per hour) so the resulting volume flow from the VOC control air handling system will not overwhelm the air handling capability of the remaining Dryer Line Furnace. The hammer mill and pellet mill aspiration system may be vented to the atmosphere for no more than 360 hours per year. [Permit No. 0630058-019-AC]

{Permitting Note: To reduce the potential for the pellet mills to become plugged when it is necessary to reduce the operating rate of the pelletizing lines, the pellet production/processing rate shall be reduced as quickly as practicable. Under normal circumstances, this will occur within one hour of a furnace being taken down.}

C.5. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Permit No. 0630058-019-AC]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging time(s) for the following emissions standards are based on the specified averaging time of the applicable test method.

{Permitting Note: These emissions units are subject to the General Visible Emissions Standards of Rule 62-296.320(4)(b), F.A.C., and may be required to test for visible emissions by the Department. See Section II, Facility-wide Conditions.}

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any requirement of an NSPS or NESHAP provision.

C.6. Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

C.7. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(1), F.A.C.]

Monitoring of Operations

C.8. Bag filters, Bin Vent Filters, and Cyclones. Monitoring, inspections and maintenance shall be performed according to manufacturer's recommendations and shall include as a minimum:

a. Monitoring of the pressure differential and maintaining within recommended range to ensure proper operation;
b. monthly visual inspection of the system ductwork and material collection unit for leaks, and;
c. annual internal inspection of the bag filters' structural integrity.

[Permit No. 0630058-019-AC]

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.9. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
5	Method for Determining Particulate Matter Emissions (All PM is assumed to be PM_{10}.)
9	Visual Determination of the Opacity of Emissions from Stationary Sources
18 and 25A	Method for Determining Gaseous Organic Concentrations (Flame Ionization)

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C.; 40 CFR 60 Appendix A]

C.10. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. The Department shall be notified at least 15 days prior to testing to allow witnessing. Results shall be submitted to the Department within 45 days after testing. Notification of compliance testing and completed test reports may be submitted by electronic mail to nwdair@dep.state.fl.us. The Department can require special compliance tests in accordance with Rule 62-297.310(8)(c) F.A.C. Other test methods and alternate compliance procedures may be used only after prior Departmental approval has been obtained in writing. [Rules 62-297.310(8), (9) & (10) and 62-297.620(1), F.A.C.]

C.11. Tests Prior To Renewal. Except as provided in subparagraph 62-297.310(8)(b)3., F.A.C. (see condition **TR7.**b.(3) in Appendix TR – Facility-wide Testing Requirements), PM, HAP, VOC and visible emissions tests shall be performed on each of the Pelletizing Lines Cooler Exhaust Stacks 1 through 3 to verify emissions estimates prior to each operating permit renewal application due date so that the test results can be submitted with the application. [Rules 62-210.300(2)(a) and 62-297.310(8)(b), F.A.C.]

{Permitting Note: Tests which are only required once during the term of a permit prior to obtaining a renewed permit should be performed roughly five years from the previous test.}

C.12. Operating Conditions During Testing. Testing of emissions shall be conducted with the emissions unit operating at testing capacity. Testing capacity is defined as at least 90 percent of the maximum operation rate (121 tons pellets per hour measured at the Pellet Bulk Loadout during testing). The averaging time for the maximum operating rate for the pellet coolers' testing shall be based on the specified averaging time of the applicable test method. If it is impracticable to test at the testing capacity, an emissions unit may be tested at less than the testing capacity. If the emissions unit is tested at less than the testing capacity, another emissions test shall be conducted and completed no later than 60 days after the emissions unit operation exceeds 110% of the capacity at which its most recent emissions test was conducted. [Rules 62-210.370(1) & (2)(d)1, 62-212.300(1)(e), and 62-297.310(3), F.A.C.; and, Permit No. 0630058-019-AC]

Recordkeeping and Reporting Requirements

C.13. Pelletizing Lines 1, 2 and 3 Production During Testing. Verification of production for emissions estimates for the Pelletizing Lines shall be demonstrated with records of the bulk load-out process rate measured in tons of pellets per hour averaged over the time that compliance testing is conducted. Records shall be submitted with the emissions test reports. [Permit No. 0630058-019-AC]

C.14. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440(1)(b), F.A.C.]

C.15. Facility-wide VOC Emissions Recordkeeping and Reporting. See requirements in Section II., Specific Condition **FW10.**, Facility-wide VOC Emissions Recordkeeping. [Permit No. 0630058-019-AC]

C.16. Hourly Records of Aspiration System Venting to the Atmosphere. Permittee shall record the date, time, and number of hours that the hammer mill and pellet mill aspiration systems are vented to the atmosphere. [Permit No. 0630058-019-AC]

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The specific conditions in this section apply to the following emissions unit:

EU No.	Brief Description
007	Bulk Load-out Area

Pellets are transported to two storage bins, each with a capacity of 94 tons, and located above the rail car loading area. The bins provide up to about two hours of pellet storage and uniformly meter out the pellets for rail car loading. All conveyors are sealed with dust aspiration air directed to a Buhler dust filter system, exhausting through the Bulk Load-out Exhaust Stack.

The Bulk Load-out Area has PM/PM_{10} emissions of 0.71 tons per year potential emissions based on a manufacturer's guarantee.

Permit No. 0630058-019-AC limited the production rate to 821,833 tons of pellets per rolling 12-month total. The maximum allowable hourly rate is only limited for compliance testing purposes.

Essential Potential to Emit (PTE) Parameters

D.1. Permitted Capacity. The permitted maximum allowable facility production rate is 821,833 tons of pellets per rolling 12-month total. The permitted maximum allowable hourly rate for testing purposes is 121 tons of pellets per hour averaged over the testing period. [Rules 62-4.070(3), 62-210.200(PTE), 62-210.200(194), and 62-212.400(2)(a)3., F.A.C.; and, Permit No. 0630058-019-AC]

{Permitting Note: The facility production limit is intended to provide reasonable assurance that facility-wide emissions increases from Project 0630058-011-AC do not equal or exceed the 250 tons per year PSD threshold}

D.2. Hours of Operation. This emissions unit may operate continuously (8,760 hours/year). [Rule 62-210.200(PTE), F.A.C.; and, Permit No. 0630058-019-AC]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging time for the following specific condition is based on the specified averaging time of the applicable test method.

{Permitting Note: This emissions unit is subject to the General Visible Emissions Standards of Rule 62-296.320(4)(b), F.A.C. and may be required to test for visible emissions by the Department. See Section II, Facility-wide Conditions.}

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

{The visible emissions limit and testing upon permit renewal requirement was removed with Permit No. 0630058-011-AC because this emission unit is only subject to the general visible emissions standard.}

D.3. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources *{when required}*

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C., and, Permit No. 0630058-019-AC]

D.4. Common Testing Requirements. The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.; and, Permit No. 0630058-019-AC]

Recordkeeping and Reporting Requirements

D.5. Process Rate Records. Permittee shall maintain records of the bulk load-out process rate measured in tons of pellets per hour averaged on a 24-hour basis calculated daily, and, monthly and 12-month rolling totals of tons of pellets. The 12-month rolling totals are to be calculated by the end of the month following each 12-month period. These records shall be maintained in a form suitable for inspection and/or submittal to the Department upon request. [Permit No. 0630058-019-AC]

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The specific conditions in this section apply to the following emissions unit:

EU No.	Brief Description
010	Emergency Fire Pump Engine, CI RICE

This emissions unit consists of a 110 Hp John Deere Model JU4H-UF58 compression ignition (CI) internal combustion engine, with a displacement of 1.05 liters per cylinder. The four cylinder 4.5 L displacement engine was manufactured December 2007 and meets the definition of a new engine. This engine is subject to applicable requirements of 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Engine Identification	Engine Brake HP	Date of Purchase	Model Year	Displacement liters per cylinder (l/c)	Engine Manufacturer	Model No. / Serial No.
Fire Pump	110 (82 kW)	01/2008	2007	1.05	John Deere	JU4H-UF58 CD4045B020286

Essential Potential to Emit (PTE) Parameters

E.1. Maximum Operating Rate (Internal Combustion Engine). The maximum operation rate for the internal combustion (IC) engine is 110 HP. [Rule 62-210.200(PTE), F.A.C.; and Permit No. 0630058-019-AC]

E.2. Restricted Hours of Operation. An emergency stationary ICE must be operated according to the requirements in paragraphs (f)(1) through (3) of 40 CFR 60.4211. Any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of 40 CFR 60.4211, is prohibited. If the engine is not operated according to the requirements in paragraphs (f)(1) through (3) of 40 CFR 60.4211, the engine will not be considered an emergency engine under 40 CFR 60 subpart IIII and must meet all requirements for non-emergency engines. The emergency stationary ICE may be operated for any combination of the purposes specified in paragraphs (f)(2)(i) of 40 CFR 60.4211 for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (f)(3) of 40 CFR 60.4211 counts as part of the 100 hours per calendar year allowed by paragraph (f)(2).

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4211(f)(1)]

b. *Maintenance and Testing*. Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. [Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4211(f)(2)(i)]

c. *Non-emergency Situations*. Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (f)(2) of 40 CFR 60.4211. Except as provided in paragraph (f)(3)(i) of 40 CFR 60.4211, the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. . [Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4211(f)(3)]

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E.3. Authorized Fuel. This emergency stationary compression ignition internal combustion engine must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content*. The sulfur content shall not exceed = 15 ppm = 0.0015% by weight (ultra low sulfur) for non-road fuel.
b. *Cetane and Aromatic*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.
c. *Use of Existing Fuel*. Any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4207(b) & 40 CFR 80.510(b); and, Permit No. 0630058-019-AC]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

E.4. Emissions Limits. Unless otherwise specified, the averaging time(s) for the following specific condition(s) are based on the specified averaging time of the applicable test method. Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants (below).

a. *NO_x + NMHC Emissions*. Emissions of NO_x plus non-methane hydrocarbons shall not exceed 10.5 grams per kilowatt hour (g/kW-hr).
b. *CO Emissions*. Carbon monoxide (CO) emissions shall not exceed 5.0 g/kW-hr.
c. *PM Emissions*. Particulate matter (PM) emissions shall not exceed 0.8 g/kW-hr.

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4205(c), & Table 4 of 40 CFR 60, Subpart IIII]

E.5. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engines according to the manufacturer's emission-related written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those emission-related settings that are permitted by the manufacturer. This engine must be maintained and operated to meet the emissions standards over the entire life of the engine.
[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4206 and 40 CFR 60.4211(a)(1), (2) & (3)]

Monitoring of Operations

E.6. The permittee must meet the monitoring requirements of this section. In addition, permittee must also meet the monitoring requirements specified in 40 CFR 60.4211.

a. Hour Meter. If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.
b. Diesel Particulate Filter. If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in 40 CFR 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4209]

Testing and Compliance Requirements

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

E.7. Engine Certification and Optional Compliance Requirements. Owners and operators of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in 40 CFR 60.4205(c), must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of 40 CFR 60.4211(b) (below):

a. Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

b. Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.
c. Keeping records of engine manufacturer data indicating compliance with the standards.
d. Keeping records of control device vendor data indicating compliance with the standards.
e. Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in 40 CFR 60.4212, as applicable.

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4211(b)]

E.8. Compliance Requirements Due to Loss of Certification. If you do not install, configure, operate, and maintain the engine and control device according to the manufacturer's emission-related written instructions, or emission-related settings are changed in a way that is not permitted by the manufacturer, compliance must demonstrated by keeping a maintenance plan and records of conducted maintenance and by the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, an initial performance test must be conducted to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after emission-related settings are changed in a way that is not permitted by the manufacturer. [40 CFR 60.4211(g) and (g)(2)]

E.9. Testing Requirements. In the event performance tests are required due to the loss of certification, owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (e) of this section (below):

a. The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F, for stationary CI ICE with a displacement of less than 10 liters per cylinder, and according to 40 CFR part 1042, subpart F, for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder.
b. Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.
c. Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \qquad \text{(Eq. 1)}$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in 40 CFR 60.4213 of this subpart, as appropriate.

d. Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in 40 CFR 60.4204(a), 40 CFR 60.4205(a), or 40 CFR 60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 60.4204(a), 40 CFR 60.4205(a), or 40 CFR 60.4205(c), determined from the equation in paragraph (c)(above).

Where:

STD = The standard specified for that pollutant in 40 CFR 60.4204(a), 40 CFR 60.4205(a), or 40 CFR 60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in 40 CFR 60.4204(a), 40 CFR 60.4205(a), or 40 CFR 60.4205(c) may follow the testing procedures specified in 40 CFR 60.4213, as appropriate.

e. Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1042 must not exceed the NTE standards for the same model year and maximum engine power as required in 40 CFR 1042.101(c).

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4212]

Recordkeeping and Reporting Requirements

E.10. Operation Records. If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. [Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4214(b)]

E.11. Diesel Filter Records. If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4214(c)]

E.12. Annual Report. If you own or operate an emergency stationary CI ICE with a maximum engine power more than 100 HP that operates for the purposes specified in 40 CFR 60.4211(f)(3)(i), you must submit an annual report according to the requirements in paragraphs (d)(1) through (3) of this section (below):

a. The report must contain the following information:
   (1) Company name and address where the engine is located.
   (2) Date of the report and beginning and ending dates of the reporting period.
   (3) Engine site rating and model year.
   (4) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.
   (5) Hours spent for operation for the purposes specified in 40 CFR 60.4211(f)(3)(i), including the date, start time, and end time for engine operation for the purposes specified in 40 CFR 60.4211(f)(3)(i). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

b. Annual reports for each calendar year must be submitted no later than March 31 of the following calendar year. The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/*cdx*). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR 60.4.

[Rule 62-204.800(8)(b), F.A.C.; 40 CFR 60.4214(d)]

E.13. Maintenance Records. To demonstrate compliance with the manufacturer's written instructions for maintaining the certified engine and to document when compliance testing must be performed pursuant to *Compliance Requirements Due to Loss of Certification*, the owner or operator must keep the following records:

a. Engine manufacturer data indicating compliance with the standards.
b. A copy of the manufacturer's written instructions for operation and maintenance of the certified engine.
c. A written maintenance log detailing the date and type of maintenance performed on the engine, as well as any deviations from the manufacturer's written instructions.

[Rules 62-204.800(8)(b) and 62-213.440(1), F.A.C.; 40 CFR 60.4211(g) and (g)(2)]]

Other Requirements

E.14. NESHAP Subpart ZZZZ Applicability. This diesel engine is a new, stationary Liquid Fueled Compression Ignition Reciprocating Internal Combustion Engine (RICE) and shall comply with applicable provisions of 40 CFR 63 Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c), the engine may meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII. No further requirements of Subpart ZZZZ apply for such engines. [Rules 62-204.800(8)(b) and 62-204.800(11)(b), F.A.C.; 40 CFR 63.6590(a)(2)(ii) and 40 CFR 63.6590(c)(6); and, Permit No. 0630058-019-AC]

E.15. 40 CFR 60 Subpart A, General Provisions. This diesel engine shall comply with all applicable requirements of 40 CFR 60 Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C. This engine shall comply with the applicable portions of Appendix 40 NSPS Subpart A included with this permit, as specified below.

General Provisions Citation	Subject of Citation
§ 60.1	General applicability of the General Provisions
§ 60.2	Definitions (see also 40 CFR 60.4219)
§ 60.3	Units and abbreviations
§ 60.4	Address
§ 60.5	Determination of construction or modification
§ 60.6	Review of plans
§ 60.7	Notification and Recordkeeping (as specified in 40 CFR 60.4214(a)
§ 60.8	Performance tests (if required)
§ 60.9	Availability of information
§ 60.10	State Authority
§ 60.12	Circumvention
§ 60.14	Modification
§ 60.15	Reconstruction
§ 60.16	Priority list
§ 60.17	Incorporations by reference
§ 60.19	General notification and reporting requirements

[Rule 62-204.800(d), F.A.C.; 40 CFR 60 subpart A]

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This section of the permit addresses the following emissions unit.

EU No.	Emission Unit Description
012	Two Natural Gas Fired Boilers

This emissions unit consists of two new natural gas-fired boilers, each with a maximum heat input capacity of 8.4 million British thermal units per hour (MMBtu/hr). The boilers are equipped with low-NO_X burners and have replaced two existing steam generators which were heated by a slip stream from each of the dryer furnaces. The new boilers are not heated by a slip stream from the dryer furnaces.

Steam from these boilers is used to heat the aspiration system gas stream from the hammermills and pellet mills to prevent condensation of volatile organic compounds (VOC) and buildup of wood fiber on the duct walls. Steam also heats flush water containing caustic used in the wet electrostatic precipitator (WESP). The two new boilers were placed in the same location as the previously-existing steam generators on Dryer Line Nos. 1 and 2, emissions units (EU) 002 and 003. Flue gases from the new boilers are routed directly to the atmosphere.

{Permitting Note: These boilers commenced commercial operation on October 9, 2017. They are subject to regulation pursuant to 40 CFR 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters and air construction permit No. 0630058-021-AC, issued June 5, 2017. The stack parameters for these boilers are: stack height = 120 feet; exit diameter = 14 inches (1.17 feet); exit temperature = 250°F; and, exhaust gas flow rate = 2,450 acfm at 100% firing rate. Obstructed vertical discharge with a weather cap.}

Essential Potential to Emit (PTE) Parameters

F.1. Permitted Capacity. The maximum allowable heat input rate for each boiler is limited to 8.4 MMBtu per hour. [Permit No. 0630058-021-AC]

F.2. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(3), F.A.C.]

F.3. Methods of Operation - Fuel. Both boilers shall be operated using natural gas only. [Rules 62-213.410, 62-296.406(2) & (3), F.A.C. (Small Boiler BACT); and, Permit No. 0630058-021-AC]

F.4. Hours of Operation. The hours of operation are not limited (8,760 hours per year). [Permit No. 0630058-021-AC]

Emission Limitations and Standards

F.5. Visible Emissions (VE). VE shall not exceed 20 percent opacity except for one six-minute period per one-hour period during which opacity shall not exceed 27 percent. [Rule 62-296.406(1), F.A.C.; and, Permit No. 0630058-021-AC]

F.6. Work Practice Standards for 40 CFR 63, Subpart DDDDD. Initial compliance with the applicable work practice standards of Table 3 to 40 CFR 63, Subpart DDDDD must be demonstrated within the applicable biennial schedule as specified in 40 CFR 63.7515(d) following initial start up of the boilers unless EPA has approved an alternative work practice standard. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7500(a)(1) & (b); 40 CFR 63.7510(g)]

a. *Tune-Ups.* The first tune-up for each boiler must be no later than 25 months after initial startup of each boiler. Tune-ups of each boiler following the procedures described in 40 CFR 63.7540(a)(10)(i) through (vi) (below) must be completed every 2 years as specified in 40 CFR 63.7540, but no later than 25 months after the previous tune-up. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the burner inspection may be performed any time prior to the tune-up or the burner inspection may be delayed until the next scheduled unit shutdown). At units where entry into a piece of process

equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

(2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;

(3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the inspection may be delayed until the next scheduled unit shutdown);

(4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject;

(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and,

(6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (a)(10)(vi)(A) through (C) of 40 CFR 63.7540 (below),

(a) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;

(b) A description of any corrective actions taken as a part of the tune-up; and,

(c) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

[Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7500(e); 40 CFR 63.7515(d) & (g); 40 CFR 63.7540(a)(10)(i) through (vi), 63.7540(a)(11) & (13); and, Table 3 of 40 CFR 63, Subpart DDDDD]

b. *Compliance*. The emissions units shall be in compliance with the work practice standards of 40 CFR 63, Subpart DDDDD at all times the affected units are operating, except during periods of startup and shutdown. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7500(a) & (f); and, 40 CFR 63.7505(a)]

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F.7. Minimize Emissions. At all times, any affected source (as defined in 40 CFR 63.7490), including associated air pollution control equipment and monitoring equipment, must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7500(a)(3); and, Permit No. 0630058-021-AC]

Test Methods and Procedures

F.8. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, F.A.C.; and Appendix A of 40 CFR 60]

F.9. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

F.10. Annual Compliance Tests Required. During each calendar year (January 1st to December 31st), each boiler shall be tested to demonstrate compliance with the emissions standards for visible emissions. Because

these boilers are subject to a multiple-valued opacity standard, the required minimum period of observation for a visible emissions test shall be 60 minutes. [Rules 62-297.310(5)(b) & (8)(a)3., F.A.C.]

Recordkeeping and Reporting Requirements

F.11. Recordkeeping for 40 CFR 63, Subpart DDDDD. A copy of each notification and report that was submitted to comply with 40 CFR 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that was submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv), must be kept. Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii), must be kept. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7555(a)(1)&(2); and, Permit No. 0630058-021-AC]

F.12. Recordkeeping Form and Duration for 40 CFR 63, Subpart DDDDD. Records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). Each record must be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. Each record must be kept on site, or they must be accessible from on site (for example, through a computer network), for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). The records can be kept off site for the remaining 3 years. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7560; and, Permit No. 0630058-021-AC]

F.13. Notifications for 40 CFR 63, Subpart DDDDD. All of the applicable notifications in 40 CFR 63.7(b) & (c), 63.8(e), (f)(4) & (6), and, 63.9(b) through (h) must be submitted to the Administrator by the dates specified. As specified in 40 CFR 63.9(b)(4) & (5), an Initial Notification must be submitted not later than 15 days after the actual date of startup of the new boilers. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7495(d) and 63.7545(a) & (c); and, Permit No. 0630058-021-AC]

F.14. Notification of Compliance Status (NOCS) Report for 40 CFR 63, Subpart DDDDD. The Notification of Compliance Status must contain the information specified in applicable paragraphs (e)(1), (6), (7) and (8) of 40 CFR 63.7545 (below), and must be submitted within 60 days of the startup of each boiler.

a. A description of the affected unit(s) including identification of which subcategories the unit is in, the design heat input capacity of the unit, a description of the add-on controls used on the unit to comply with this subpart, description of the fuel(s) burned, including whether the fuel(s) were a secondary material determined by you or the EPA through a petition process to be a non-waste under §241.3 of this chapter, whether the fuel(s) were a secondary material processed from discarded non-hazardous secondary materials within the meaning of §241.3 of this chapter, and justification for the selection of fuel(s) burned during the compliance demonstration.
b. A signed certification that all applicable emission limits and work practice standards have been met.
c. If there was a deviation from any work practice standard, a description of the deviation, the duration of the deviation, and the corrective action taken must be submitted in the NOCS report.
d. The information required in 40 CFR 63.9(h)(2).

[Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7530(f) & 63.7545(e); and, Permit No. 0630058-021-AC]

F.15. Notification of Alternative Fuel Use. If the owner or operator intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of this part, part 60, 61, or 65, or other gas 1 fuel to fire the boilers during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, a notification of alternative fuel use must be submitted within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information specified in paragraphs (f)(1) through (5) of 40 CFR 63.7545:

(a) Company name and address.
(b) Identification of the affected unit.
(c) Reason natural gas or equivalent fuel is unable to be used, including the date when the natural gas curtailment was declared or the natural gas supply interruption began.
(d) Type of alternative fuel intended to be used.

(e) Dates when the alternative fuel use is expected to begin and end.
[Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7530(f) & 40 CFR 63.7545(f); and, Permit No. 0630058-021-AC]

{Permitting Note: Propane is included in the definition of natural gas in 40 CFR 63.7575}

F.16. Compliance Upon Fuel Switch or Physical Change. If the owner or operator has switched fuels or made a physical change to the boilers that resulted in the applicability of a different subcategory, the owner or operator must be in compliance with the applicable new source provisions of this subpart on the effective date of the fuel switch or physical change. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7545(i); and, Permit No. 0630058-021-AC]

*{Permitting Note: An air construction permit must be applied for and received prior to switching fuel (except as allowed in Specific Condition **F.15.**) or making a physical change.}*

F.17. Report Submission for 40 CFR 63, Subpart DDDDD. Each applicable report required by Table 9 of 40 CFR 63, Subpart DDDDD, must be submitted electronically to the EPA via the CEDRI (Compliance and Emissions Data Reporting Interface) that can be accessed through the EPA's Central Data Exchange (CDX) (*www.epa.gov/cdx*). [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7550(a) & (h)(3); and, Permit No. 0630058-021-AC]

a. *Alternative Electronic File.* The appropriate electronic report in CEDRI must be used for this subpart. Instead of using the electronic report in CEDRI for this subpart, an alternate electronic file consistent with the XML schema listed on the CEDRI Web site (*http://www.epa.gov/ttn/chief/cedri/index.html*), may be submitted once the XML schema is available. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7550(h)(3)]

b. *Reporting Form.* If the reporting form specific to 40 CFR 63 subpart DDDDD is not available in CEDRI at the time that the report is due, the report must be submitted to the Administrator at the appropriate address listed in 40 CFR 63.13. The owner or operator must begin submitting reports via CEDRI no later than 90 days after the form becomes available in CEDRI. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7550(h)(3)]

c. *Report Schedule.* Unless the EPA Administrator has approved a different schedule for submission of reports under 40 CFR 63.10(a), each report must be submitted, according to paragraph (h) of 40 CFR 63.7550, by the date in Table 9 to this subpart and according to the requirements in paragraphs (b)(1) through (4) of 40 CFR 63.7550 (see next specific condition for report dates and content). A biennial compliance report may be submitted instead of a semi-annual compliance report. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7550(b)]

[Permit No. 0630058-021-AC]

F.18. Compliance Reports for 40 CFR 63, Subpart DDDDD.

a. *Biennial Compliance Report.* If opting to submit a biennial compliance report, the first compliance report must cover the period beginning with the start up of the boilers and ending on December 31 within 2 years after start up of the boilers and must be postmarked or submitted no later than January 31. Each subsequent compliance report must cover the applicable 2-year periods from January 1 to December 31 and must be postmarked or submitted no later than January 31.

b. *Compliance Reports Contents.* The compliance report must be submitted with the following information in paragraphs (c)(5)(i) through (iii), (xiv) and (xvii) of 40 CFR 63.7550:
   (1) Company and Facility name and address
   (2) Process unit information.
   (3) Date of report and beginning and ending dates of the reporting period.
   (4) The date of the most recent tune-up; and the date of the most recent burner inspection if it was not done biennially and was delayed until the next scheduled or unscheduled unit shutdown.
   (5) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

[Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63.7550(b) & (c); and, Permit No. 0630058-021-AC]

F.19. Test Reports. The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix TR, Facility-wide Testing Requirements, of this permit. [Rule 62-297.310(10), F.A.C.; and, Permit No. 0630058-021-AC]

Other Requirements

F.20. 40 CFR 63, Subparts A and DDDDD. This emissions unit is subject to applicable requirements contained in 40 CFR 63, Subpart A, General Provisions (see Table 10 of 40 CFR 63, Subpart DDDDD, below), as well as all applicable requirements of 40 CFR 63, Subpart DDDDD, National Emissions Standards for Industrial, Commercial, and Institutional Boilers and Process Heaters, including but not limited to notifications, biennial tune-ups, and reports. The compliance date of 40 CFR 63, Subpart DDDDD for these new boilers is upon startup. [Rule 62-204.800(11)(b), F.A.C.; 40 CFR 63, Subparts A and DDDDD]

Table 10 to Subpart DDDDD of Part 63—Applicability of General Provisions to Subpart DDDDD

Citation	Subject	Applies to subpart DDDDD
§63.1	Applicability	Yes.
§63.2	Definitions	Yes. Additional terms defined in §63.7575
§63.3	Units and Abbreviations	Yes.
§63.4	Prohibited Activities and Circumvention	Yes.
§63.5	Preconstruction Review and Notification Requirements	Yes.
§63.6(a), (b)(1)-(b)(5), (b)(7), (c)	Compliance with Standards and Maintenance Requirements	Yes.
§63.6(e)(1)(i)	General duty to minimize emissions.	No. See §63.7500(a)(3) for the general duty requirement.
§63.6(e)(1)(ii)	Requirement to correct malfunctions as soon as practicable.	No.
§63.6(e)(3)	Startup, shutdown, and malfunction plan requirements.	No.
§63.6(f)(1)	Startup, shutdown, and malfunction exemptions for compliance with non-opacity emission standards.	No.
§63.6(f)(2) and (3)	Compliance with non-opacity emission standards.	Yes.
§63.6(g)	Use of alternative standards	Yes, except §63.7555(d)(13) specifies the procedure for application and approval of an alternative timeframe with the PM controls requirement in the startup work practice (2).
§63.6(h)(1)	Startup, shutdown, and malfunction exemptions to opacity standards.	No. See §63.7500(a).
§63.6(h)(2) to (h)(9)	Determining compliance with opacity emission standards	No. Subpart DDDDD specifies opacity as an operating limit not an emission standard.
§63.6(i)	Extension of compliance	Yes. Note: Facilities may also request extensions of compliance for the installation of combined heat and power, waste heat recovery, or gas pipeline or fuel feeding infrastructure as a means of complying with this subpart.
§63.6(j)	Presidential exemption.	Yes.
§63.7(a), (b), (c), and (d)	Performance Testing Requirements	Yes.

Citation	Subject	Applies to subpart DDDDD
§63.7(e)(1)	Conditions for conducting performance tests	No. Subpart DDDDD specifies conditions for conducting performance tests at §63.7520(a) to (c).
§63.7(e)(2)-(e)(9), (f), (g), and (h)	Performance Testing Requirements	Yes.
§63.8(a) and (b)	Applicability and Conduct of Monitoring	Yes.
§63.8(c)(1)(i)	General duty to minimize emissions and CMS operation	No. See §63.7500(a)(3).
§63.8(d)(1) and (2)	Monitoring Requirements, Quality Control Program	Yes.
§63.9	Notification Requirements	Yes.
§63.10(a), (b)(1)	Recordkeeping and Reporting Requirements	Yes.
§63.10(b)(2)(i)	Recordkeeping of occurrence and duration of startups or shutdowns	Yes.
§63.10(b)(2)(ii)	Recordkeeping of malfunctions	No. See §63.7555(d)(7) for recordkeeping of occurrence and duration and §63.7555(d)(8) for actions taken during malfunctions.
§63.10(b)(2)(iii)	Maintenance records	Yes.
§63.10(b)(2)(iv) and (v)	Actions taken to minimize emissions during startup, shutdown, or malfunction	No.
§63.10(b)(3)	Recordkeeping requirements for applicability determinations	No.
§63.10(c)(10) and (11)	Recording nature and cause of malfunctions, and corrective actions	No. See §63.7555(d)(7) for recordkeeping of occurrence and duration and §63.7555(d)(8) for actions taken during malfunctions.
§63.10(c)(15)	Use of startup, shutdown, and malfunction plan	No.
§63.10(d)(1) and (2)	General reporting requirements	Yes.
§63.10(d)(3)	Reporting opacity or visible emission observation results	No.
§63.10(d)(4)	Progress reports under an extension of compliance	Yes.
§63.10(d)(5)	Startup, shutdown, and malfunction reports	No. See §63.7550(c)(11) for malfunction reporting requirements.
§63.10(f)	Waiver of recordkeeping or reporting requirements	Yes.
§63.11	Control Device Requirements	No.
§63.12	State Authority and Delegation	Yes.
§63.13-63.16	Addresses, Incorporation by Reference, Availability of Information, Performance Track Provisions	Yes.
§63.1(a)(5),(a)(7)-(a)(9), (b)(2), (c)(3)-(4), (d), 63.6(b)(6), (c)(3), (c)(4), (d), (e)(2), (e)(3)(ii), (h)(3), (h)(5)(iv), 63.8(a)(3), 63.9(b)(3), (h)(4), 63.10(c)(2)-(4), (c)(9).	Reserved	No.

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Attachment B

State of Mississippi

AIR POLLUTION CONTROL PERMIT

Permit To Construct Air Emissions Equipment

THIS CERTIFIES

Amite BioEnergy LLC, Wood Pellet Manufacturing Facility
Old Highway 24
Gloster, MS
Amite County

has been granted permission to construct air emissions equipment to comply with the emission limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Mississippi Air and Water Pollution Control Law (Section 49-17-1 et. seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder.

Mississippi Environmental Quality Permit Board

Mississippi Department of Environmental Quality

Issued/Modified: NOV 2 6 2012

Expires:

Permit No. 0080-00031

Agency Interest # 57796

Table of Contents

Permit To Construct Air Emissions Equipment

Amite BioEnergy LLC, Wood Pellet Manufacturing Facility

Subject Item Inventory

Permit Number: 0080-00031

Activity ID No.: PER20120001

Subject Item Inventory:

ID	Designation	Description
EQPT1	AA-001	Chip Dryer with 225 MMBTU/hr wood furnace and 221 MMBTU/hr natural gas back-up heat source. Emissions are controlled by a wet ESP and a 24 MMBTU/hr Regenerative Thermal Oxidizer (RTO). (Facility Ref. No. EP-1)
EQPT3	AA-002	Dryer Feed Bin with bin vent (Facility Ref. No. EP-2)
EQPT4	AA-003	Dry Material Feed Silo with bin vent (Facility Ref. No. EP-3)
EQPT5	AA-004	Hammermill Pneumatic System Vent with cyclone (Facility Ref. No. EP-4)
EQPT6	AA-005	Pellet Mill Silo with bin vent (Facility Ref. No. EP-5)
EQPT7	AA-006	Pellet Mill Silo with bin vent (Facility Ref. No. EP-6)
EQPT16	AA-007	Pellet Screen Fines with return cyclone no. 1 (Facility Ref. No. EP-7)
EQPT17	AA-008	Pellet Screen Fines with return cyclone no. 2 (Facility Ref. No. EP-8)
EQPT8	AA-009	Pellet Cooler with cyclone (Facility Ref. No. EP-9)
EQPT9	AA-010	Pellet Cooler with cyclone (Facility Ref. No. EP-10)
EQPT10	AA-011	Pellet Cooler with cyclone (Facility Ref. No. EP-11)
EQPT11	AA-012	Pellet Cooler with cyclone (Facility Ref. No. EP-12)
EQPT12	AA-013	Pellet Cooler with cyclone (Facility Ref. No. EP-13)
EQPT13	AA-014	Pellet Tempering Silo No. 1 Vent (Facility Ref. No. EP-14)
EQPT14	AA-015	Pellet Tempering Silo No. 2 Vent (Facility Ref. No. EP-15)
EQPT15	AA-016	Final Pellet Screen Fines with pneumatic system filter (Facility Ref. No. EP-16)
EQPT2	AA-017	Wood Rechipper with cyclone (Facility Ref. No. EP-17)
AI57796		
EQPT19	AA-018	250 hp Fire Pump Engine

Permit To Construct Air Emissions Equipment

Amite BioEnergy LLC, Wood Pellet Manufacturing Facility

Subject Item Inventory

Permit Number:0080-00031

Activity ID No.: PER20120001

ID	Designation	Description
EQPT20	AA-019	600 kW Emergency Diesel Generator (805 hp)

Subject Item Groups:

ID	Description	Components
GRPT1	Emergency Engines	EQPT19 250 hp Fire Pump Engine
		EQPT20 600 kW Emergency Diesel Generator (805 hp)
GRPT2		EQPT3 Dryer Feed Bin with bin vent (Facility Ref. No. EP-2)
		EQPT4 Dry Material Feed Silo with bin vent (Facility Ref. No. EP-3)
		EQPT5 Hammermill Pneumatic System Vent with cyclone (Facility Ref. No. EP-4)
		EQPT6 Pellet Mill Silo with bin vent (Facility Ref. No. EP-5)
		EQPT7 Pellet Mill Silo with bin vent (Facility Ref. No. EP-6)
		EQPT16 Pellet Screen Fines with return cyclone no. 1 (Facility Ref. No. EP-7)
		EQPT17 Pellet Screen Fines with return cyclone no. 2 (Facility Ref. No. EP-8)
		EQPT8 Pellet Cooler with cyclone (Facility Ref. No. EP-9)
		EQPT9 Pellet Cooler with cyclone (Facility Ref. No. EP-10)
		EQPT10 Pellet Cooler with cyclone (Facility Ref. No. EP-11)
		EQPT11 Pellet Cooler with cyclone (Facility Ref. No. EP-12)
		EQPT12 Pellet Cooler with cyclone (Facility Ref. No. EP-13)
		EQPT13 Pellet Tempering Silo No. 1 Vent (Facility Ref. No. EP-14)
		EQPT14 Pellet Tempering Silo No. 2 Vent (Facility Ref. No. EP-15)
		EQPT15 Final Pellet Screen Fines with pneumatic system filter (Facility Ref. No. EP-16)
		EQPT2 Wood Rechipper with cyclone (Facility Ref. No. EP-17)

KEY

ACT = Activity

AI = Agency Interest

AREA = Area

CAFO = Concentrated Animal Feeding Operation

Permit To Construct Air Emissions Equipment

Amite BioEnergy LLC, Wood Pellet Manufacturing Facility

Subject Item Inventory

Permit Number: 0080-00031

Activity ID No.: PER20120001

KEY	
CONT = Control Device	EQPT = Equipment
IA = Insignificant Activity	MAFO = Animal Feeding Operation
RPNT = Release Point	TRMT = Treatment

EQPT0000000001 (AA-001) Chip Dryer with 225 MMBTU/hr wood furnace and 221 MMBTU/hr natural gas back-up heat source. Emissions are controlled by a wet ESP and a 24 MMBTU/hr Regenerative Thermal Oxidizer (RTO). (Facility Ref. No. EP-1):

Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Particulate Matter	Particulate Matter: For Emission Point AA-001, the maximum permissible emission of ash and/or particulate matter from fossil fuel burning installations with equal to or greater than 10 million BTU per hour heat input but less than 10,000 million BTU per hour heat input shall not exceed an emission rate as determined by the relationship: E = 0.8808 * I^-0.1667 where E is the emission rate in pounds per million BTU per hour heat input and I is the heat input in milions of BTU per hour. [APC-S-1 4.a(2)]
L-2	Nitrogen oxides	For Emission Point AA-001, the permittee shall have emissions of Nitrogen oxides <= 240 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-3	Opacity	Opacity: No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial or waste disposal process which exceeds forty (40) percent opacity except as provided for in APC-S-1, Section 3.1(b) and (c). [APC-S-1 3.1]
L-4	Sulfur Dioxide	Sulfur Dioxide: For Emission Point AA-001, the maximum discharge of sulfur dioxide emissions from any modified fuel burning unit whose generation capacity is less than 250 million BTU per hour and in which the fuel is burned primarily to produce heat or power by indirect heat transfer shall not exceed 2.4 pounds (measured as sulfur dioxide) per million BTU heat input. [APC-S-1 4.1(c)]
L-5	VOC	For Emission Point AA-001, the permittee shall have emissions of VOC <= 40 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-6		For Emission Point AA-001, the permittee shall not exceed the heat input rate for the dryer and furnace combined of 225 MMBTU/hr as measured with a 3-hour block average. The 225 MMBTU/hr does not include the heat input associated with operation of the 24 MMBTU/hr RTO burner. [APC-S-2 II.B(10)]

EQPT0000000001 (continued):

Monitoring Requirements:

Condition No.	Parameter	Condition
M-1		For Emission Point AA-001, the permittee shall demonstrate compliance with PM, PM10, NOx, CO, VOC, and HCl emission limitations by stack testing in accordance with EPA Test Methods 1 through 5, 201 or 201A, 7, 10, 25 or 25A, and 26 respectively and the procedures outlined below: a. The initial performance test shall be performed within 180 DAYS AFTER initial start-up of permitted equipment. b. The test must be conducted in accordance with test methods specified within this permit or by an approved equivalent method. c. Testing must be performed at the maximum capacity of the system or at a capacity representative of its normal operation if maximum capacity cannot be achieved. d. A notification of intent to conduct the performance test must be submitted to the Office of Pollution Control sixty (60) days prior to the scheduled test date. e. A written test protocol must be submitted at least thirty (30) days prior to the intended test date(s) to ensure that all test methods and procedures are acceptable to the office of pollution control. If needed, the permittee may request a pretest conference to discuss the test methods and procedures. The pretest conference should be scheduled at least thirty (30) days prior to the test date. f. A notification of the scheduled test date(s) should be submitted ten (10) days prior to the scheduled date(s) so that an observer may be afforded the opportunity to witness the test(s) g. The performance test results must be submitted to the Office of Pollution Control (OPC) within 60 days following compliance demonstration test. [APC-S-2 II.B(10)]
M-2		The permittee shall calculate the VOC destruction efficiency through the WESP and the RTO and calculate the formaldehyde emitted after the control devices. These emissions shall be included with the stack test report required by Condition M-1(EQPT-001). [APC-S-2 II.B(10)]

Record-Keeping Requirements:

Condition No.	Condition
R-1	For Emission Point AA-001, the permittee shall keep a record of the heat input on a continuous basis in order to demonstrate compliance with the heat input limitation on a 3-hour block average. A summary report shall be submitted by January 31 and July 31 for the preceding six month period. [APC-S-2 II.B(10)]

EQPT0000000001 (continued):

Narrative Requirements:

Condition No.	Condition
T-1	Beginning on ISSUANCE DATE, the permittee is authorized to construct air emissions equipment for the emission of air contaminants for Emission Point AA-001, the Chip Dryer with 225 MMBTU/hr wood furnace and 221 MMBTU/hr natural gas back-up heat source. Emissions are controlled by a wet ESP and a regenerative thermal oxidizer. (Facility Ref. No. EP-1). The air emissions equipment shall be constructed to comply with the emission limitations and monitoring requirements specified elsewhere in this permit. Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

AI0000057796:

Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Carbon Dioxide Equivalent (CO2e)	For the entire facility the permittee shall have emissions of nonbiogenic Carbon Dioxide Equivalent (CO2e) <= 99900 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-2	Carbon Monoxide	For the entire facility, the permittee shall have emissions of Carbon Monoxide <= 249 tons/yr. [APC-S-1 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-3	Particulate Matter	For the entire facility the permittee shall have emissions of Particulate Matter <= 249 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-4	Formaldehyde	For the entire facility, the permittee shall have emissions of Formaldehyde <= 9.9 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-5	Hydrochloric acid (HCl)	For the entire facility, the permittee shall have emissions of Hydrochloric acid (HCl) <= 9.9 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-6	Nitrogen oxides	For the entire facility the permittee shall have emissions of Nitrogen oxides <= 249 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.
L-7	VOC	For entire facility, the permittee shall have emissions of VOC <= 249 tons/yr. [APC-S-2 II.B(10)] This requirement is applicable during the following months: Jan-Dec. Statistical basis: Annual Maximum.

Record-Keeping Requirements:

Carbon Dioxide Equivalent (CO2e):

Condition No.	Condition
R-1	Carbon Dioxide Equivalent (CO2e): For the entire facility, the permittee shall calculate nonbiogenic carbon dioxide equivalent emissions on a 12 month rolling average to demonstrate compliance with the facility wide permit limitation. The information shall be submitted in report form no later than January 31 and July 31 of the previous six month period. [APC-S-2 II.B(10)]

AI0000057796 (continued):

Submittal/Action Requirements:

Condition No.	Condition
S-1	General Condition: The permittee shall submit certification of construction: Due within thirty (30) days of completion of construction or installation of an approved stationary source or prior to startup, whichever is earlier. The notification shall certify that construction or installation was performed in accordance with the approved plans and specifications. In the event there is any change in construction from the previously approved plans and specifications or permit, the permittee shall promptly notify MDEQ in writing. If MDEQ determines the changes are substantial, MDEQ may require the submission of a new application to construct with "as built" plans and specifications. Notwithstanding any provision herein to the contrary, the acceptance of an "as built" application shall not constitute a waiver of the right to seek compliance penalties pursuant to State Law. [APC-S-2 V.D]
S-2	Within fifteen (15) days of beginning actual construction, the permittee must notify DEQ in writing that construction has begun. [APC-S-2 V.C(2)]
S-3	The permittee must notify DEQ in writing when construction does not begin within eighteen (18) months of issuance or if construction is suspended for eighteen (18) months or more. [APC-S-2 V.C(3)]

Narrative Requirements:

General Condition:

Condition No.	Condition
T-1	General Condition: The stationary source shall be designed and constructed so as to operate without causing a violation of any Applicable Rules and Regulations or this permit, without interfering with the attainment and maintenance of State and National Ambient Air Quality Standards, and such that the emission of air toxics does not result in an ambient concentration sufficient to adversely affect human health and well-being or unreasonably and adversely affect plant or animal life beyond the stationary source boundaries. [APC-S-2 V.A]
T-2	General Condition: Any activities not identified in the application are not authorized by this permit. [Miss. Code Ann. 49_17_29 1.b]
T-3	General Condition: The necessary facilities shall be constructed so that solids removed in the course of control of air emissions may be disposed of in a manner such as to prevent the solids from becoming windborne and to prevent the materials from entering State waters without the proper environmental permits. [Miss. Code Ann. 49_17_29]

AI0000057796 (continued):

Narrative Requirements:

General Condition:

Condition No.	Condition
T-4	General Condition: The air pollution control facilities shall be constructed such that diversion from or bypass of collection and control facilities is not needed except as provided for in Regulation APC-S-1, "Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants", Section 10. [APC-S-1 10]
T-5	General Condition: The permittee shall allow the Mississippi Environmental Quality Commission, the Mississippi Environmental Quality Permit Board, MDEQ staff and/or their authorized representatives, upon the presentation of credentials: a. To enter upon the permittee's premises where an air emission source is located or in which any records are required to be kept under the terms and conditions of this permit; and b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit, to inspect any monitoring equipment or monitoring method required in this permit, and to sample any air emission. [Miss. Code Ann. 49_17_21]
T-6	General Condition: After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for good cause shown including, but not limited to, the following: a. Persistant violation of any terms or conditions of this permit; b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or c. A change in any condition that requires either a temporary or permanent reduction or elimination of previously authorized air emissions. [APC-S-2 II.C]
T-7	General Condition: Except for data determined to be confidential under the Mississippi Air & Water Pollution Control Law, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Mississippi Department of Environmental Quality Office of Pollution Control. [Miss. Code Ann. 49_17_39]

Condition No.	Condition
T-8	General Condition:This permit is for air pollution control purposes only. [APC-S-2 I.D]
T-9	General Condition: The knowing submittal of a permit application with false information may serve as the basis for the Permit Board to void the permit issued pursuant thereto or subject the applicant to penalties for operating without a valid permit pursuant to State Law. [APC-S-2 II.B(5)]

AI0000057796 (continued):

Narrative Requirements:

Condition No.	Condition
T-10	General Condition: It is the responsibility of the applicant/permittee to obtain all other approvals, permits, clearances, easements, agreements, etc., which may be required including, but not limited to, all required local government zoning approvals or permits. [APC-S-2 I.D(6)]
T-11	General Condition: The issuance of a permit does not release the permittee from liability for constructing or operating air emissions equipment in violation of any applicable statute, rule, or regulation of state or federal environmental authorities. [APC-S-2 II.B(7)]
T-12	General Condition: It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit, unless halting or reducing activity would create an imminent and substantial endangerment threatening the public health and safety of the lives and property of the people of this state. [APC-S-2 II.B(15)a]
T-13	General Condition: The permit and/or any part thereof may be modified, revoked, reopened, and reissued, or terminated for cause. Sufficient cause for a permit to be reopened shall exist when an air emissions stationary source becomes subject to Title V. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [APC-S-2 II.B(15)b]
T-14	General Condition: The permit does not convey any property rights of any sort, or any exclusive privilege. [APC-S-2 II.B(15)c]
T-15	General Condition: The permittee shall furnish to the DEQ within a reasonable time any information the DEQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee shall furnish such records to the DEQ along with a claim of confidentiality. The permittee may furnish such records directly to the Administrator along with a claim of confidentiality. [APC-S-2 II.B(15)d]
T-16	General Condition: This permit shall not be transferred except upon approval of the Permit Board. [APC-S-2 XVI.B]
T-17	General Condition: The provisions of this permit are severable. If any provision of the permit, or the application of any provision of the permit to any circumstances, is challenged or held invalid, the validity of the remaining permit provisions and/or portions thereof or their application to other persons or sets of circumstances, shall not be affected thereby. [APC-S-2 I.D(7)]
T-18	General Condition: The permit to construct will expire if construction does not begin within eighteen (18) months from the date of issuance or if construction is suspended for eighteen (18) months or more. [APC-S-2 V.C(1)]

AI0000057796 (continued):

Narrative Requirements:

Condition No.	Condition
T-19	General Condition: A new stationary source issued a Permit to Construct cannot begin operation until certification of construction by the permittee. [APC-S-2 V.D(3)]
T-20	General Condition: Except as prohibited in APC-S-2, Section V.D.7, after certification of construction by the permittee, the Permit to Construct shall be deemed to satisfy the requirement for a permit to operate until the date the application for issuance or modification of the Title V Permit or the application for issuance or modification of the State Permit to Operate, whichever is applicable, is due. This provision is not applicable to a source excluded from the requirement for a permit to operate as provided by APC-S-2, Section XIII.G. [APC-S-2 V.D(4)]
T-21	General Condition: Except as otherwise specified in APC-S-2, Section V.D.7, the application for issuance or modification of the State Permit to Operate or the Title V Permit, whichever is applicable, is due twelve (12) months after beginning operation or such earlier date or time as specified in the Permit to Construct. The Permit Board may specify an earlier date or time for submittal of the application. Beginning operation will be assumed to occur upon certification of construction, unless the permittee specifies differently in writing. [APC-S-2 V.D(5)]
T-22	General Condition: Except as otherwise specified in APC-S-2, Section V.D.7, upon submittal of a timely and complete application for issuance or modification of a State Permit to Operate or a Title V Permit, whichever is applicable, the applicant may continue to operate under the terms and conditions of the Permit to Construct and in compliance with the submitted application until the Permit Board issues, modifies, or denies the Permit to Operate. [APC-S-2 V.D(6)]
T-23	General Condition: For moderate modifications that require contemporaneous enforceable emissions reductions from more than one emission point in order to net out of PSD/NSR, the applicable Title V Permit to Operate or State Permit to Operate must be modified prior to beginning operation of the modified facilities. [APC-S-2 V.D(7)]
T-24	General Condition: Regarding compliance testing: (a) The results of any emissions sampling and analysis shall be expressed both in units consistent with the standards set forth in any Applicable Rules and Regulations or this permit and in units of mass per time. (b) Compliance testing will be performed at the expense of the permittee. (c) Each emission sampling and analysis report shall include but not be limited to the following: 1. detailed description of testing procedures; 2. sample calculation(s); 3. results; and 4. comparison of results to all Applicable Rules and Regulations and to emission limitations in the permit. [APC-S-2 VI.B(3, 4 and 6)]

AI0000057796 (continued):

Narrative Requirements:

Condition No.	Condition
T-25	General Condition: The construction of the stationary source shall be performed in such a manner so as to reduce fugitive dust emissions from construction activities to a minimum. [APC-S-2 V.A(4)]
T-26	For the entire facility, the permittee shall keep all control devices (as described in the equipment descriptions and the permit application) in service at all times the related production equipment is in operation. [APC-S-2 II.B(10)]
T-27	Any exceedance of the limitations outlined in this permit shall be reported to MDEQ no later than seven (7) days following the occurence. [APC-S-2 II.B(10)]
T-28	Upon certification of construction and commencement of operation, a summary of any recordkeeping required by this permit must be submitted to this office on a semi-annual basis. The summary report shall be submitted by January 31 and July 31 for the preceding six month period. [APC-S-2 II.B(10)]

GRPT0000000001 (AA-100) Emergency Engines:

Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Particulate Matter	Particulate Matter: For Emission Point AA-001, the maximum permissible emission of ash and/or particulate matter from fossil fuel burning installations less than 10 million BTU per hour heat input per hour shall not exceed 0.6 pounds per million BTU per hour heat input. [APC-S-1 4.a(1)]
L-2	Opacity	Opacity: No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial or waste disposal process which exceeds forty (40) percent opacity except as provided for in APC-S-1, Section 3.1(b) and (c). [APC-S-1 3.1]

Narrative Requirements:

Condition No.	Condition
T-1	For Emission Points AA-018 and AA-019, The permittee is subject to and shall comply with all applicable terms and conditions of the New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII. [40 CFR 60_Subpart IIII]
T-2	For Emission Points AA-018 and AA-019, The permittee is subject to and shall comply with all applicable terms and conditions of thethe National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ. [40 CFR 63_Subpart ZZZZ]
T-3	Beginning on ISSUANCE DATE, the permittee is authorized to construct air emissions equipment for the emission of air contaminants for Emission Points AA-018 and AA-019, the 250 hp Fire Pump Engine and 600 kW Emergency Diesel Generator (805 hp). The air emissions equipment shall be constructed to comply with the emission limitations and monitoring requirements specified elsewhere in this permit. Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

GRPT0000000002 (AA-101):

Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Opacity	Opacity: No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial or waste disposal process which exceeds forty (40) percent opacity except as provided for in APC-S-1, Section 3.1(b) and (c). [APC-S-1 3.1]

Monitoring Requirements:

Condition No.	Parameter	Condition
M-1		For Emission Points AA-002, AA-003, AA-004, AA-005, AA-006, AA-007, AA-008, AA-009, AA-010, AA-011, AA-012, AA-013, AA-014, AA-015, AA-016, and AA-017, the permittee shall conduct weekly observations for visible emissions. If visible emissions are observed from the emission point (six-minute interval), the permittee shall conduct visible emission evaluations (VEE) in accordance with EPA Reference Method 9. The permittee shall maintain records of weekly visible emissions observations and any VEEs that are performed in log book form. A summary report shall be submitted by January 31 and July 31 for the preceeding six month period. The permittee may perform the observations on multiple stacks at the same time, where multiple stacks can be viewed simultaneously. [APC-S-2 II.B(10)]
M-2		For equipment associated with Emission Points AA-002, AA-003, AA-004, AA-005, AA-006, AA-007, AA-008, AA-009, AA-010, AA-011, AA-012, AA-013, AA-014,AA-015, AA-016, and AA-017 (including all cyclones), the permittee shall perform regular inspections and any required maintenance each week or more often if necessary to maintain proper operation of the pollution control equipment. The permittee shall maintain records in log book form. A summary report shall be submitted by January 31 and July 31 for the preceeding six month period. The permittee shall also maintain on hand at all times sufficient equipment as is necessary to repair and/or replace the pollution control equipment. [APC-S-2 II.B(10)]

GRPT0000000002 (continued):

Monitoring Requirements:

Condition No.	Parameter	Condition
M-3		For equipment associated with Emission Points AA-004, AA-009, AA-010, AA-011, AA-012, AA-013, and AA-017 (including all cyclones), the permittee shall demonstrate compliance with PM emission limitations by stack testing in accordance with EPA Test Methods 1-5 and the procedures outlined below: a. The initial performance test shall be performed within 180 DAYS AFTER initial start-up of permitted equipment. b. The test must be conducted in accordance with test methods specified within this permit or by an approved equivalent method. c. Testing must be performed at the maximum capacity of the system or at a capacity representative of its normal operation if maximum capacity cannot be achieved. d. A notification of intent to conduct the performance test must be submitted to the Office of Pollution Control sixty (60) days prior to the scheduled test date. e. A written test protocol must be submitted at least thirty (30) days prior to the intended test date(s) to ensure that all test methods and procedures are acceptable to the office of pollution control. If needed, the permittee may request a pretest conference to discuss the test methods and procedures. The pretest conference should be scheduled at least thirty (30) days prior to the test date. f. A notification of the scheduled test date(s) should be submitted ten (10) days prior to the scheduled date(s) so that an observer may be afforded the opportunity to witness the test(s) g. The performance test results must be submitted to the Office of Pollution Control (OPC) within 60 days following compliance demonstration test i. The permittee may request to stack test only one or more of these emission points where identical units are installed and would be shown to be representative. [APC-S-2 II.B(10)]

GRPT0000000002 (continued):

Narrative Requirements:

Particulate Matter:

Condition No.	Condition
T-1	Particulate Matter: For Emission Points AA-002, AA-003, AA-004, AA-005, AA-006, AA-007, AA-008, AA-009, AA-010, AA-011, AA-012, AA-013, AA-014, AA-015, AA-016, and AA-017 except as otherwise specified, no person shall cause, permit, or allow the emission of particulate matter in total quantities in any one hour from any manufacturing process, which includes any associated stacks, vents, outlets, or combination thereof, to exceed the amount determined by the relationship E = 4.1 p^0.67 Where E is the emission rate in pounds per hour and p is process weight input rate in tons per hour. [APC-S-1 3.6(a)]

Condition No.	Condition
T-2	Beginning on ISSUANCE DATE, the permittee is authorized to construct air emissions equipment for the emission of air contaminants for Emission Points AA-002, AA-003, AA-004, AA-005, AA-006, AA-007, AA-008, AA-009, AA-010, AA-011, AA-012, AA-013, AA-014,AA-015, AA-016, and AA-017 (including all cyclones). The air emissions equipment shall be constructed to comply with the emission limitations and monitoring requirements specified elsewhere in this permit. Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

GENERAL INFORMATION

Amite BioEnergy LLC, Wood Pellet Manufacturing Facility
Old Highway 24
Gloster, MS
Amite County

Alternate/Historic Identifiers

ID	Alternate/Historic Name	User Group	Start Date	End Date
57796	Amite BioEnergy, LLC, Wood Pellet Manufacturing Facility	Official Site Name	6/8/2012	
MSR106274	Amite BioEnergy, LLC, Wood Pellet Manufacturing Facility	GP-Construction	11/26/2012	12/31/2015
008000031	Amite BioEnergy, LLC, Wood Pellet Manufacturing Facility	Air-Construction	11/26/2012	

Basin: South Independent Streams Basin

Location Description:

Attachment C

November 5, 2018

By U.S. Mail and E-Mail to:
Michael G. Dowd
Director of Air Division
Virginia Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

RE: Enforcement of Hazardous Air Pollutant Related Violations at Enviva Pellets Southampton.

Dear Mr. Dowd,

On June 12, 2018, the Virginia Department of Environmental Quality (DEQ) notified Enviva Pellets Southampton that the Department would require Enviva to complete comprehensive compliance testing for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs). Environmental Integrity Project, along with the Southern Environmental Law Center, Dogwood Alliance, Natural Resources Defense Council, Partnership for Policy Integrity, and Our Children's Earth Foundation, were glad to see that DEQ took a hard look at emissions of HAPs at the Enviva Pellets Southampton facility, and we were further encouraged that DEQ planned to require the facility to complete comprehensive emissions testing. Unfortunately, it now appears that DEQ has decided not to require those tests until after Enviva has radically modified the facility, meaning those tests will not reveal what is almost certainly a serious, years-long violation of the Clean Air Act and the facility's permit.

Along with the undersigned groups, we therefore write to ask that DEQ bring an enforcement action based on existing credible evidence that Enviva Southampton constructed a major source of HAPs without undergoing appropriate permitting and that the facility has likewise been violating permit limits on individual and total HAPs since it began operations in 2014. The Clean Air Act requires sources with potential or actual emissions in excess of 10 tons per year for individual HAPs, or 25 tons per year for total HAP emissions, (i.e., major sources) to undergo rigorous "maximum achievable control technology" permitting, which Enviva has not done.[1] The operating permit DEQ issued to Enviva also places limits on HAP emissions, limits which are even stricter than the major source thresholds.[2] As we established in our April 26, 2018 letter to

[1] 42 U.S.C. § 7412(g)(2)(B).
[2] Enviva's current air permit limits methanol emissions to 8.1 tpy, formaldehyde emissions to 9.9 tpy, and acetaldehyde emissions to 2.9 tpy. *See* VDEQ Stationary Source Permit to Modify and Operate, Registration No.

Governor Northam, the existing stack testing data from the wood pellet industry reveals that it is simply not possible that Enviva Southampton's HAP emissions are below either the facility's permitted limits or the major source thresholds.[3]

At least three factors argue strongly in favor of Virginia DEQ bringing an enforcement action against Enviva Pellets Southampton: First, Enviva almost certainly knew or should have known about the excess HAP emissions since at least 2013; Second, the facility released massive amounts of harmful and unlawful HAPs into the neighboring community of Franklin, Virginia for years and will continue to do so for at least two more years,[4] meaning actual harm to the community is probable; Finally, Enviva enjoyed a huge economic benefit to the tune of $7.5 million in avoided costs and $4.4 million in delayed costs by failing to install proper HAP pollution controls—controls which all of the company's primary competitors utilize, giving the company a significant competitive advantage.

Enviva Almost Certainly Knew About Excess HAP Emissions Since 2013.

Based on emission testing and other evidence, it is likely that Enviva was aware of the excess HAP emissions as early as 2013, yet Enviva failed to act on this information. Enviva conducted HAPs emission testing on the wood dryer at Southampton in both 2013 and 2015, and also conducted two sets of HAPs testing at the nearly identical Enviva Northampton facility in North Carolina in 2013 (while processing the same rate of softwood and hardwood as Southampton).[5]

61653, issued January 6, 2015, Condition 47. Previous permits had even lower limits, limiting any single HAP to 3.6 tpy or less. *See, e.g.*, VDEQ Stationary Source Permit to Modify and Operate, Registration No. 61653, issued September 5, 2012, Condition 52.

[3] EIP, *et al.*, letter to Governor Ralph S. Northam, April 26, 2018. (Attachment A). As our letter explained, Enviva has incorrectly assumed that processing more hardwood than softwood results in lower HAP emissions, and that because the Southampton facility processes 90% or more hardwood, it is not a major source of HAP emissions. Our letter detailed EIP's survey of 11 sets of stack tests for HAPs at similar pellet mills, which revealed that hardwoods emit substantially higher levels of HAPs than Enviva claims. Most importantly, each of the tests produced an emission factor that, when applied to Enviva Southampton, shows that the facility's individual and total HAP emissions vastly exceed the major source thresholds for individual and total HAPs, as well as the HAP limits contained in Enviva Southampton's operating permit. The tests are provided in Attachment B, and all of the tests EIP has compiled for the wood pellet industry are available at: https://drive.google.com/open?id=1sGN4d2kUt1tuvIfb9bNpKrYTBYylkuM2.

[4] As a condition for allowing Enviva to avoid DEQ's testing request, DEQ required Enviva to submit "key construction and emission testing milestones" which will be incorporated as enforceable permit conditions. Enviva's September 2018 permit modification application includes three proposed milestones for beginning construction and testing the new wood dryer controls. Enviva proposes testing the new controls by December 27, 2020, or "30 days after all necessary government approvals are obtained, whichever is later." The facility therefore may not be required to operate the new controls until late 2020 or later, depending on the "government approvals." *See* Enviva Southampton, Application for Modification of Stationary Source Permit for he Increased Utilization of Softwood and the Installation of Emissions Controls, September 2018, Appendix G, Construction and Testing Schedule.

[5] Letter from Michael H. Carbon, Managing Principle, Ramboll, to Kevin Godwin, Permit Engineer, North Carolina Department of Environmental Quality, Re: Response to Additional Information Request for PSD Permit Modification, Softwood Expansion Project, Enviva Pellets Sampson (July 18, 2018). (Attachment C). The Northampton tests occurred while the facility processed the same rate of softwood/hardwood as the Southampton plant currently processes, and the mill's wood dryer appears to be identical, i.e. a 175.3 MMBtu, single pass rotary drum direct heated wood dryer.

While Enviva has never produced the results of these four sets of HAPs testing, that fact itself is revealing. EIP submitted detailed comments arguing that the Northampton facility was a major source of HAPs as constructed, and Enviva responded to those comments at great length.[6] Despite vehemently arguing that Enviva Northampton was not a major source of HAPs when built, Enviva never mentioned that it had conducted HAPs testing on that facility's wood dryer, nor at Southampton. If the two Northampton tests—or the two tests at the essentially identical Southampton facility—showed anything other than compliance, why did Enviva not cite to those tests to resolve the matter? Likewise, when DEQ requested that Enviva Southampton conduct HAPs testing due to concerns that the facility was actually a major source of HAPs, Enviva again did not produce these potentially exculpating tests, and instead requested a delay in testing until it installed controls that would remedy the problem.

In addition to these four sets of HAPs testing from 2013 and 2015, Enviva knew or should have known in 2013 that the company's basis for estimating HAP emissions at Southampton was deeply flawed. Statements made by Enviva's own consultant, Air Control Techniques P.C., in a test report from testing at an Enviva facility in Mississippi, revealed that "[t]he emissions of organic HAP compounds are not sensitive to the hardwood/softwood ratio."[7] This plainly contradicted Enviva's foundation for estimating HAP emissions at Southampton, which was that HAPs decreased in sync with VOCs when processing more hardwood.[8]

Enviva's Unlawful HAP Emissions Are Serious and Impact Vulnerable Virginians.

Enviva's excess HAP emissions represent a serious violation and a years-long threat to human health in the community of Franklin, Virginia and beyond. Based on conservative estimates from 11 sets of stack testing at wood pellet mills across a wide range of hardwood/softwood mixes, it is clear that Enviva Southampton has the potential to emit *at least* 46 tons of HAPs per year—almost double the legal limit—including 21 tons of methanol, 16 tons of formaldehyde, and 8 tons of acetaldehyde.[9] Assuming Enviva has been operating at or near its nameplate capacity, which is probable based on contractual obligations and SEC filings, this means the facility has actually emitted 13 tons of unlawful methanol emissions per year, 6.1 tons of unlawful formaldehyde emissions per year, and 5.1 tons of unlawful acetaldehyde emissions per year.[10]

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[6] Enviva's Response to Comments from the Environmental Integrity Project on Enviva Northampton Draft Title V Permit (December 22, 2017). (Attachment D).

[7] Air Emission Test Report for Enviva Pellets Wiggins, Prepared by Air Control Techniques, October 31, 2013, at 14. (Attachment B).

[8] Enviva has consistently estimated HAP emissions from Enviva Southampton's wood dryer as such: "[t]o account for hardwood emissions since no HAP emission factors are given [by EPA's database of emission factors, known as AP-42] for direct hardwood-fired [wood dryers], factors were conservatively calculated by multiplying AP-42 Section 10.6.2-3 HAP factors for green, direct softwood fired by the ratio of the VOC emission factors for hardwood to softwood drying (0.24/4.7)." Enviva Pellets Southampton Title V Permit Application, January 4, 2016, Table 5. In other words, Enviva has assumed that each individual HAP is emitted at the same ratio as total VOC emissions, i.e. decreasing softwood also decreases HAP emissions, which is not borne out by either Enviva's consultant's statement or the stack tests EIP surveyed.

[9] EIP, *et al.*, letter to Governor Ralph S. Northam, April 26, 2018.

[10] *Supra* note 2. Enviva's air permit restricts individual HAP emissions to levels lower than the major source threshold, therefore the numbers given here represent emissions above those limits.

EPA lists acetaldehyde and formaldehyde as probable human carcinogens, and both cause additional short term respiratory problems and chronic symptoms occur from long term exposure.[11] The health risks of methanol emissions, meanwhile, include "a decrease in gestation time, an increase in the number of required Caesarian-section births, and, in prenatally exposed children, instances of a severe wasting syndrome, concentration-related delay in sensorimotor development and lower performance on an infant intelligence test."[12]

These unlawful HAP emissions have not occurred in a vacuum. The Southampton facility is located less than three miles from Franklin, Virginia's elementary, middle, and high schools. Additionally, the residential neighborhoods of Franklin located closest to the Enviva Southampton—just two miles to the east of the facility—are predominately low income and minority communities, ranking in the 96th and 98th percentile nationally for environmental justice indicators.[13] As the Commonwealth of Virginia has recognized, such communities should not "bear disproportionately high or adverse effects from pollution."[14]

Enviva Enjoyed Substantial Economic Benefit and Competitive Advantage by Not Complying With the Clean Air Act.

Enviva's noncompliance gave the company a substantial economic benefit and unfair competitive advantage in the industry, which DEQ considers important factors in determining how to respond to violations.[15] The only wood pellet mills of Southampton's scale in the country that have not installed control technology that reduce HAPs to area source levels are Enviva's mills in Virginia and North Carolina.[16] By failing to install a regenerative thermal oxidizer (RTO) on Southampton's wood dryer, Enviva avoided approximately $1.9 million per year in operating costs based on Enviva's own estimates for an RTO at a similar Enviva mill in North Carolina.[17] To date, that represents $7.5 million in operating costs that Enviva avoided, which constitutes a major advantage over competitors. In addition to these avoided costs, Enviva also enjoyed the delayed costs of acquiring and constructing an RTO, which the company estimated would involve a capital expenditure of $4,477,410 at its comparable North Carolina mill.[18] As demonstrated by the fact that Enviva's competitors operate RTOs, doing so at Enviva Southampton would certainly have been economically feasible five years ago.[19] Yet the company made a business decision to avoid these costs—a decision that lead directly to the facility violating the Clean Air Act and emitting tons of unlawful HAPs.

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[11] U.S. EPA, Integrated Risk Information System.
[12] *Ass'n of Irritated Residents v. Fred Schakel Dairy*, 634 F. Supp. 2d 1081 (E.D. Cal., 2008); *see also Am. Forest & Paper Assoc. v. EPA*, 294 F.3d 113, 118-19 (D.C. Cir. 2002).
[13] EPA, EJSCREEN, *available at:* https://ejscreen.epa.gov/mapper/.
[14] Virginia, Exec. Order No. 73 (2017).
[15] VDEQ, Civil Enforcement Manual, Chapter 4, at 3-4. *Available at*: https://www.deq.virginia.gov/Programs/Enforcement/Laws,Regulations,Guidance.aspx.
[16] EIP, *Dirty Deception, How the Wood Biomass Industry Skirts the Clean Air Act*, April 26, 2018, at 29. *Available at:* https://www.environmentalintegrity.org/reports/dirty-deception/.
[17] Enviva Pellets Sampson, Revised PSD Air Quality Construction and Operating Permit Application, Appendix D – BACT Tables (August 2014). (Attachment E).
[18] *Id.*
[19] In fact, Enviva originally intended to install an RTO on its wood dryer when it initially applied for a permit to construct, but subsequently decided not to install an RTO when it switched to processing hardwood.

Virginia DEQ Must Not Let Enviva Off the Hook for These Serious Violations.

Based on the foregoing, DEQ should not allow Enviva to escape accountability for these extremely serious, ongoing violations. Although Enviva submitted an application to install RTOs at the facility after DEQ requested testing, which will likely remedy the years-long HAP violations, that should not dissuade DEQ from bringing an enforcement action. DEQ's enforcement manual explains that "an enforcement response that is appropriate to the alleged violation deters similar noncompliance by the Responsible Party *and throughout the regulated community*."[20] By letting Enviva off the hook, DEQ would be sending the signal to other industrial sources that they can emit unlawful levels of harmful air pollutants indefinitely without fear of repercussions so long as the source is willing to act if, and only if, the violation happens to be discovered.

As you are aware, DEQ can establish a violation of the air pollution standards or permit terms using "any credible evidence or information."[21] The emissions testing at numerous comparable pellet mills, as well as the statements by Enviva's consultant constitute such credible evidence, evidence which is more than sufficient to establish that Enviva constructed and operated a major source of HAPs without proper permitting, including the use of maximum achievable control technology, and that Enviva exceeded its permitted HAP limits in each year since it began operations.

Finally, because Enviva apparently believes the changes it plans at the Southampton mill will remedy any potential emissions issues, we ask that DEQ provide public notice and an opportunity for public comment on the upcoming permit modification for Enviva Southampton.

Respectfully,

/s/ Patrick Anderson

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[20] Virginia DEQ Enforcement Manual, Chapter 3, at 1.
[21] 9 VAC 5-60-20(E). The "any credible evidence" rule allows for enforcement actions premised on any credible evidence, including the exclusive use of that credible evidence. The "any credible evidence" rule allows for demonstrating noncompliance even where a facility has not conducted emissions testing.

315 W. Ponce de Leon Ave, Suite 842
Decatur, GA 30030

Co-signing organizations: The Southern Environmental Law Center, Dogwood Alliance, Natural Resources Defense Council, Partnership for Policy Integrity, and Our Children's Earth.

Attachments: Attachment A through E.

cc:
Todd M. Alonzo, Manager, Office of Air Compliance Coordination (by email at todd.alonzo@deq.virginia.gov);
Kerri L. Nicholas, Manager, Air Enforcement (by email at kerri.nicholas@deq.virginia.gov);
Tamara M. Thompson, Manager, Office of Air Permitting (by email at tamera.thompson@deq.virginia.gov);
Craig R. Nicol, Regional Director, Tidewater Regional Office (by email at craig.nicol@deq.virginia.gov);
John Brandt, Regional Enforcement Manager, Tidewater Regional Office (by email at john.brandt@deq.virginia.gov).

Attachment A:
Letter From EIP, *et al.*, to Governor Northam

Environmental Integrity Project | Dogwood Alliance | Our Children's Earth | Partnership for Policy Integrity | Natural Resources Defense Council

April 26, 2018

The Honorable Ralph S. Northam
Office of the Governor
P.O. Box 1475
Richmond, VA 23218

Dear Governor Northam:

We, the undersigned community and environmental groups who work to protect the health and wellbeing of Virginia's citizens and environment, call on Virginia officials to address the dangerous and unlawful air pollution emitted by the wood pellet manufacturing industry in Virginia. In particular, we request that Virginia halt the unpermitted emissions of hazardous air pollutants at the Enviva Southampton pellet mill near Suffolk, and take the additional steps set forth in this letter to address other deficiencies at the Enviva facility and in any future permitting actions.

Today, Environmental Integrity Project (EIP) released a report, "Dirty Deception: How the Wood Biomass Industry Skirts the Clean Air Act," which reveals how the wood pellet manufacturing industry in the southern US, including in Virginia, emits vast amounts of unlawful air pollution and systematically evades Clean Air Act requirements to reduce that pollution.[1] These factories, including the massive Enviva Southampton mill, convert millions of tons of trees into wood pellets to be shipped to Europe, where they are burned for electricity under the false premise that doing so is carbon neutral. It turns out this emerging industry emits substantially more air pollution here in the US than anybody expected, but states—including Virginia—are not doing enough to bring these facilities into compliance with the Clean Air Act.

First, Virginia Must Eliminate Existing, Unlawful Air Pollution and Require Adequate Emissions Testing Requirements.

Virginia is home to one of the only large wood pellet mills in the nation that does not utilize any controls to reduce hazardous air pollution (HAP) and volatile organic compound (VOC) emissions: the Enviva pellet mill in Southampton County. To avoid having the Southampton Plant regulated as a major air pollution source, Enviva agreed to restrict the plant's emissions to below the "major source threshold." For VOCs, this threshold is an emission rate at or above 250 tons per year. For HAPs, the threshold is 10 tons per year for any individual HAP and 25 tons per year for combined HAPs. While the facility apparently is complying with the VOC limit (barely), **the lack of adequate pollution controls means Enviva Southampton is emitting at least 92,000 pounds of HAPs per year (46 tons), roughly twice the 24.1 ton per year limit set**

[1] Report available at http://www.environmentalintegrity.org/reports/dirty-deception/.

forth in its air pollution permit. The facility also likely emits 21 tons of methanol and 16 tons of formaldehyde, again vastly exceeding the annual limits in the facility's permit. Nearly identical facilities in other southern states that do use pollution controls emit 40 to 50 times less HAPs.[2] Notably, Virginia DEQ has never even required emissions testing for HAPs at Enviva Southampton, and instead has relied on Enviva's own estimates, which are also not based on emissions testing at wood pellet mills and rely on dubious assumptions.

Enviva argues that the Southampton plant emits much lower levels of HAPs than other similar facilities because it processes mostly hardwood. Wood pellet mills can process softwood, hardwood, or a mix of both. Because softwood emits substantially more VOCs than hardwood, Enviva assumed, without substantive evidence, that the same would be true for HAPs. However, stack test data from other facilities and statements by Enviva's own consultant strongly refute this assumption. As explained below, regardless of the ratio of hardwood and softwood, Enviva Southampton emits vast amounts of unlawful hazardous air pollution.

To test Enviva's HAP assumptions, EIP surveyed eleven sets of emissions tests at wood pellet mills processing a range of hardwood and softwood.[3] On the whole, as hardwood percentages increased, emission factors for total HAPs actually *increased* rather than decreased. Methanol emissions in particular increased substantially as more hardwood than softwood is processed. These test results agree with several studies that show more methanol emissions from drying hardwood than softwood in the lumber and engineered wood industries.[4]

Enviva's frequent consultant for emissions testing, Air Control Techniques (ACT), reached this same conclusion concerning HAPs and the hardwood/softwood mix. In reviewing emissions testing on a wood dryer at an Enviva facility in Mississippi, ACT states: "[t]he emissions of organic HAP compounds are not sensitive to the hardwood/softwood ratio. The data summarized in the [stack test report] indicate that emissions of organic HAPs decreased slightly as the softwood content increased from 10% to 100%."[5] In this context, the organic HAPs in question were formaldehyde, methanol, and acetaldehyde—those same HAPs emitted by Enviva Southampton.

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[2] For instance, the Hazlehurst Pellets mill in Georgia, which produces 525,000 tons of pellets per year compared to Enviva Southampton' 535,000 tons per year, emits less than two tons of HAPs because it uses thermal oxidizing technology to reduce HAPs by 95%. Compliance Emissions Testing, Hazlehurst Wood Pellets, Test Dates December 16-17, 2015, prepared by ATI testing.

[3] These tests include the March and April, 2017 testing at Enviva Sampson in North Carolina (25% hardwood), the October, 2013 testing at Enviva Wiggins in Mississippi (40% hardwood), and nine sets of testing conducted throughout 2017 at Appling County Wood Pellets in Georgia. Appling County tested three times at 70% hardwood, three times at 80% hardwood, and three times at 100% hardwood. All of these tests were conducted pursuant to compliance testing regulations of each state and following appropriate EPA methodology.

[4] For instance, one study assessing HAP emissions from oriented strandboard drying showed hardwood emitting nearly three times as much methanol as softwood southern pine, at .33 lb/ODT and .12 lb/ODT respectively. Milota, Michael, "Emissions from Wood Drying: the Science and the Issues," Forest Products Journal, 2000, Issue 50(6); Another study of wood drying, conducted at lumber kilns, tested five species of softwood and one species hardwood for HAP emissions, including methanol. The results again showed that the hardwood species emitted much higher rates of methanol than any of the softwoods. Milota, Mike and Mosher, Paul, "Emissions of Hazardous Air Pollutants from Lumber Drying," Forest Products Journal, July 2008 Issue 7/8, at 50-55.

[5] Air Emission Test Report for Enviva Pellets Wiggins, Prepared by Air Control Techniques, October 31, 2013, at 14.

All eleven tests EIP surveyed result in emission factors that place Enviva Southampton's HAP emissions at nearly double its emissions limits, including six tests conducted at a similar facility at nearly the same ratio of hardwood Enviva Southampton currently processes. It is simply implausible that Enviva Southampton is not exceeding its permit limits, and likewise, the Clean Air Act's major source threshold for HAPs.

Virginia DEQ must hold the Enviva Southampton plant accountable for its Clean Air Act noncompliance. In particular, Virginia DEQ must either require the facility to limit production to the point that the facility's maximum potential HAP emissions (considering controls) are below the major source threshold, or require that the facility comply with the Clean Air Act requirements applicable to major HAP sources. Specifically, Clean Air Act section 112 requires that major sources for HAP reduce their emissions using "maximum achievable control technology." Because U.S. EPA has not published a federal rule establishing what constitutes maximum achievable control technology for wood pellet mills, Virginia DEQ must make this determination on a case-by-case basis. Given that nearly every other similar mill in the nation utilizes regenerative thermal oxidizers to reduce HAP emissions from at least some of their units, use of this technology is clearly "achievable" for the Southampton plant and should be required.

Next, Virginia Must Address the Industry's Terrible History of Fires and Explosions.

Since 2014, more than half of the large pellet mills in the South have had news-worthy fires or explosions, including two fires at Enviva facilities in Virginia.[6] These fires can produce massive amounts of harmful air pollution; for instance, a recent silo fire at a Texas pellet facility burned for more than 50 days, sickening dozens of nearby residents and leading to multiple lawsuits. Many of these fires and explosions are caused by combustible wood dust, an extreme hazard at wood pellet mills.

The Clean Air Act gives Virginia a powerful tool to address wood dust explosions and fires. The Act contains a General Duty Clause which requires facilities producing or handling extremely hazardous substances to design, maintain, and operate their facilities in a safe manner. As the long list of fires and explosions at wood pellet facilities show, wood dust clearly qualifies as an extremely hazardous substance. Unfortunately, Enviva Southampton's permit does not even reference the General Duty Clause. Virginia DEQ must revise this permit to specify that the General Duty Clause applies to the facility's handling of explosive dust and require the facility to perform specific steps that are sufficient to ensure that workers and others who live, work, recreate in the facility's vicinity are protected from the dangers posed by combustible dust. At a minimum, the permit should:

(1) Identify the Clean Air Act's General Duty Clause as an applicable requirement with respect to the facility's handling of combustible dust.

[6] Bryant, Cal. "Enviva Fire Quickly Contained." *Roanoke-Chowan News-Herald* (Jan. 24, 2013), http://www.roanoke-chowannewsherald.com/2013/01/24/enviva-fire-quickly-contained/; Hill, Brian. "Firefighters Battle Fire at Port of Chesapeake." *WKTR.com* (Feb. 28, 2018), http://wtkr.com/2018/02/28/firefighters-battle-blaze-at-port-of-chesapeake/.

(2) Specifically require the facility to prepare a hazard analysis identifying the hazards associated with explosive dust and the facility's processes, potential fire and explosion scenarios, and the consequences of a fire or explosion.
(3) Establish specific design and operation standards that the facility must meet to prevent a dust-related fire or explosion.
(4) Establish recordkeeping and reporting requirements sufficient to demonstrate that the facility is meeting its General Duty Clause obligations.

Finally, Virginia Must Issue Better Permits for Future Wood Pellet Mills.

Given the heavy burden this industry places on the citizens and environment of Virginia, the undersigned groups oppose the issuance of permits for new wood pellet mills. However, if the state does issue permits for new facilities or for modifications at existing facilities, officials must ensure new permits require facilities to comply with all Clean Air Act requirements. The undersigned groups call for the following specific actions in future permitting:

1. **Require "major" sources of air pollution to install the best available control technology.** As EIP's report reveals, many pellet mills with major source permits evade using the best available control technology, or any control technology at all, while facilities with minor source permits, often the same size or larger, do utilize controls. Virginia must not reward companies for refusing to install controls that would reduce facility emissions to minor levels. Rather, Virginia must require new or modified major sources to reduce emissions using controls that are at least as effective as those utilized by the best-controlled minor sources. This includes using VOC controls that achieve at least 95% reductions on emissions on each of the major sources of pollution at the facility. If facilities in Georgia and Alabama can do this, so can Virginia facilities.

2. **Ensure Communities are Notified of and Able to Participate in Permitting Decisions.** Many of the air permits EIP surveyed from across the South were issued without any public notice or the ability to comment, including permits for the initial construction of facilities. This means communities were not informed of the decision to allow sources of air pollution to locate in their backyard. Virginia DEQ should ensure that there is a meaningful opportunity for public involvement in any permitting action authorizing the construction or modification of a wood pellet mill.

3. **Institute pellet production limits at facilities that claim to be too "minor" for the best available pollution controls.** If pollution controls will not keep emissions below legal limits when a facility is operated at full capacity, the facility's permit must restrict maximum production to a level that ensures the facility will not exceed the major source threshold.

The Clean Air Act only serves to protect health and the environment when state agencies are fully implementing all of the Act's requirements. The undersigned groups call on Virginia to address the errors and omissions identified in this letter and in EIP's report, and to further make proactive moves to better understand and control emissions from this emerging industry in the future.

Please contact Patrick Anderson at panderson@powellenvironmentallaw.com or (470) 440-1124 to respond to our request or to obtain additional information. We thank you for your leadership on the environment and your concern for the health and well-being of Virginia's citizens.

Sincerely,

Eric Schaeffer, Executive Director
Keri N. Powell, Of Counsel
Patrick J. Anderson, Of Counsel
Environmental Integrity Project

Emily Zucchino
Community Network Manager
Dogwood Alliance

Annie Beaman
Director of Advocacy & Outreach
Our Children's Earth Foundation

Dr. Mary S. Booth
Director
Partnership for Policy Integrity

Sami Yassa
Senior Scientist
Natural Resources Defense Council

CC:
Matthew J. Strickler, Secretary of Natural Resources (by email at matthew.strickler@governor.virginia.gov);
David K. Paylor, Director, Virginia DEQ (by email at david.paylor@deq.virginia.gov);
Michael Dowd, Director, Air Division, Virginia DEQ (by email at Michael.Dowd@deq.virginia.gov);
Tamara M. Thompson, Manager, Office of Air Permitting, Virginia DEQ (by email at Tamera.Thompson@deq.virginia.gov);
Todd Alonzo, Manager, Office of Air Compliance Coordination (by email at Todd.Alonzo@deq.virginia.gov).

Attachment B:
Compilation of Stack Tests

Attachment B, Part One:
Appling County Pellets Stack Tests

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (70% hardwood)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (PPM Propane)	188.3	191.0	192.7	190.6
EMISSION RATE (LB/HR propane)	32.88	32.83	34.01	33.24
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 25428 dscfm WPP1 VOC emissions: 36.64 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		33.24	(as propane)
Formaldehyde expressed as formaldehyde	+	1.63	(see 201701029)
Acetaldehyde expressed as Acetaldehyde	+	0.81	(see 201701031)
Methanol expressed as methanol***	+	1.36	(see 201701030)
Subtract Methanol expressed as propane	-	0.404872	
		36.64 lb/hr	

***Methanol: 1.36 lb/hr x 0.2977 = 0.404872 lb/hr. The factor 0.2977 converts methanol mass rate to WPP1 VOC as propane; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701028

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

SEP 14 2017

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (100% hardwood)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 21, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	11.63	12.99	12.53	12.38
EMISSION RATE (LB/HR)	1.05	1.14	1.08	1.09
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 23572 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701021

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (100% hardwood)
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 21, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	12.26	14.39	15.04	13.89
EMISSION RATE (LB/HR)	1.11	1.27	1.30	1.23
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 23572 dscfm

Methanol: 1.23 lb/hr x 0.2977 = 0.366171 lb/hr
The factor 0.2977 converts methanol mass rate to WPP1 VOC units; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701022

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

TO: Bruce Foisy
THROUGH: Daniel McCain DM
FROM: Joshua Pittman JP
SUBJECT: SOURCE TEST REPORT REVIEW

SEP 14 2017

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (100% hardwood)
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 21, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	4.12	4.81	6.41	5.11
EMISSION RATE (LB/HR)	0.37	0.42	0.55	0.45
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 23572 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701023

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

SEP 14 2017

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (100% hardwood)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 21, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (PPM Propane)	97.2	102.9	130.7	110.2
EMISSION RATE (LB/HR propane)	16.07	16.58	20.70	17.78
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 23572 dscfm WPP1 VOC emissions: 20.18 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		17.78	(as propane)
Formaldehyde expressed as formaldehyde	+	1.09	(see 201701021)
Acetaldehyde expressed as Acetaldehyde	+	0.45	(see 201701023)
Methanol expressed as methanol***	+	1.23	(see 201701022)
Subtract Methanol expressed as propane	-	0.366171	
		20.18 lb/hr	

***Methanol: 1.23 lb/hr x 0.2977 = 0.366171 lb/hr. The factor 0.2977 converts methanol mass rate to WPP1 VOC as propane; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701020

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain DM
FROM: Joshua Pittman JP
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (80% hardwood)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	14.15	16.44	11.14	13.91
EMISSION RATE (LB/HR)	1.39	1.58	1.03	1.33
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 25489 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701025

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (80% hardwood)
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	12.50	13.05	10.56	12.03
EMISSION RATE (LB/HR)	1.23	1.25	0.97	1.15
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 25489 dscfm

Methanol: 1.15 lb/hr x 0.2977 = 0.342355 lb/hr
The factor 0.2977 converts methanol mass rate to WPP1 VOC units; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701026

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (80% hardwood)
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	7.70	6.74	6.55	6.99
EMISSION RATE (LB/HR)	0.76	0.65	0.60	0.67
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 25489 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701027

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (80% hardwood)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (PPM Propane)	153.8	165.2	181.0	166.6
EMISSION RATE (LB/HR propane)	27.70	28.98	30.56	29.08
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 25489 dscfm WPP1 VOC emissions: 31.89 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		29.08	(as propane)
Formaldehyde expressed as formaldehyde	+	1.33	(see 201701025)
Acetaldehyde expressed as Acetaldehyde	+	0.67	(see 201701027)
Methanol expressed as methanol***	+	1.15	(see 201701026)
Subtract Methanol expressed as propane	-	0.342355	
		31.89 lb/hr	

***Methanol: 1.15 lb/hr x 0.2977 = 0.342355 lb/hr. The factor 0.2977 converts methanol mass rate to WPP1 VOC as propane; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701024

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain DM
FROM: Joshua Pittman JP
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (70% hardwood)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	20.33	15.89	15.21	17.14
EMISSION RATE (LB/HR)	1.94	1.49	1.47	1.63
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 25428 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701029

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain
FROM: Joshua Pittman
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (70% hardwood)
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	13.57	14.36	14.99	14.30
EMISSION RATE (LB/HR)	1.29	1.35	1.45	1.36
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

Volumetric flow rate: 25428 dscfm

Methanol: 1.36 lb/hr x 0.2977 = 0.404872 lb/hr
The factor 0.2977 converts methanol mass rate to WPP1 VOC units; see OTM-26 (Wood Products Protocol 1) for details.

cc: Sean Taylor, Sean Taylor
Reference Number: 201701030

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

SEP 14 2017

TO: Bruce Foisy
THROUGH: Daniel McCain DM
FROM: Joshua Pittman JWP
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer (70% hardwood)
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Joshua Pittman
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	June 22, 2017
DATE RECEIVED BY APB	August 18, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 Tons ODP/HR
OPERATING CAPACITY	18 Tons ODP/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (mg/M3)	10.06	7.64	7.82	8.51
EMISSION RATE (LB/HR)	0.96	0.72	0.75	0.81
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	Volumetric flow rate: 25428 dscfm			

cc: Sean Taylor, Sean Taylor
Reference Number: 201701031

AIRS Number: 00100032
Printed: 9/7/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (100% Hardwood)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	207	206	205	
GAS MOISTURE (%)	40.4	39.9	39.4	
GAS FLOW RATE (ACFM)	53586	53594	53788	
GAS FLOW RATE (DSCFM)	25293	25696	25835	
POLLUTANT CONCENTRATION (PPM Propane)	98	141	162	134
EMISSION RATE (LB/HR propane)	16.99	24.82	28.64	23.48
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

The process was operating using 100% Hardwood during testing. WPP1 VOC emissions = 26.16 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		23.48	(as propane)
Formaldehyde expressed as formaldehyde	+	1.04	
Acetaldehyde expressed as Acetaldehyde	+	0.63	
Methanol expressed as methanol***	+	1.44	
Subtract Methanol expressed as propane	-	0.429	

cc: Sean Taylor
Reference Number: 201701186

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (100% Hardwood)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	207	206	205	
GAS MOISTURE (%)	40.4	39.9	39.4	
GAS FLOW RATE (ACFM)	53586	53954	53788	
GAS FLOW RATE (DSCFM)	25293	25696	25835	
POLLUTANT CONCENTRATION (mg/DSCM)	10.20	11.25	10.95	10.80
EMISSION RATE (LB/HR)	0.97	1.08	1.06	1.04
PERCENT ALLOWABLE (%)				
OTHER INFORMATION				

cc: Sean Taylor
Reference Number: 201701187

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (100% Hardwood)
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	207	206	205	
GAS MOISTURE (%)	40.4	39.9	39.4	
GAS FLOW RATE (ACFM)	53586	53954	53788	
GAS FLOW RATE (DSCFM)	25293	25696	25835	
POLLUTANT CONCENTRATION (mg/DSCM)	14.76	15.01	15.26	15.01
EMISSION RATE (LB/HR)	1.40	1.45	1.48	1.44
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701188

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

OCT 19 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (100% Hardwood)
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	207	206	205	
GAS MOISTURE (%)	40.4	39.9	39.4	
GAS FLOW RATE (ACFM)	53586	53954	53788	
GAS FLOW RATE (DSCFM)	25293	25696	25835	
POLLUTANT CONCENTRATION (mg/DSCM)	4.81	6.73	8.23	6.59
EMISSION RATE (LB/HR)	0.46	0.65	0.80	0.63
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701189

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

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4244 International Parkway, Suite 120
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404-363-7000

OCT 19 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (80%/20% Mix)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	210	209	209	
GAS MOISTURE (%)	40.9	40.3	40.2	
GAS FLOW RATE (ACFM)	51919	48383	48068	
GAS FLOW RATE (DSCFM)	24090	22727	22644	
POLLUTANT CONCENTRATION (PPM Propane)	131	151	147	143
EMISSION RATE (LB/HR propane)	21.59	23.58	22.81	22.66
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

WPP1 VOC emissions = 24.85 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		22.66	(as propane)
Formaldehyde expressed as formaldehyde	+	0.86	
Acetaldehyde expressed as Acetaldehyde	+	0.41	
Methanol expressed as methanol***	+	1.31	
Subtract Methanol expressed as propane	-	0.39	

cc: Sean Taylor
Reference Number: 201701190

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (80%/20% Mix)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 2, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	321	AVERAGE
GAS TEMPERATURE (°F)	210	209	209	
GAS MOISTURE (%)	40.9	40.3	40.2	
GAS FLOW RATE (ACFM)	51919	48383	48068	
GAS FLOW RATE (DSCFM)	24090	22727	22644	
POLLUTANT CONCENTRATION (mg/DSCM)	2.50	14.78	12.85	10.04
EMISSION RATE (LB/HR)	0.23	1.26	1.09	0.86
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701191

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

OCT 19 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	ST01 Wood Dryer Stack (80%/20% Mix)			
POLLUTANT DETERMINED	Methanol			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 2, 2017			
DATE RECEIVED BY APB	September 28, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	210	209	209	
GAS MOISTURE (%)	40.9	40.3	40.2	
GAS FLOW RATE (ACFM)	51919	48383	48068	
GAS FLOW RATE (DSCFM)	24090	22727	22644	
POLLUTANT CONCENTRATION (mg/DSCM)	3.87	21.43	20.60	15.30
EMISSION RATE (LB/HR)	0.35	1.82	1.75	1.31
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701192

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain DM
FROM: Marie Miller MMM
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	ST01 Wood Dryer Stack (80%/20% Mix)			
POLLUTANT DETERMINED	Acetaldehyde			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 2, 2017			
DATE RECEIVED BY APB	September 28, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	210	209	209	
GAS MOISTURE (%)	40.9	40.3	40.2	
GAS FLOW RATE (ACFM)	51919	48383	48068	
GAS FLOW RATE (DSCFM)	24090	22727	22644	
POLLUTANT CONCENTRATION (mg/DSCM)	1.15	7.26	5.94	4.78
EMISSION RATE (LB/HR)	0.10	0.62	0.50	0.41
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701193

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (70%/30% Mix)
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 1, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	220	215	209	
GAS MOISTURE (%)	42.5	42.7	41.9	
GAS FLOW RATE (ACFM)	54561	53481	53075	
GAS FLOW RATE (DSCFM)	24250	23851	24219	
POLLUTANT CONCENTRATION (PPM Propane)	170	148	112	143
EMISSION RATE (LB/HR propane)	28.24	24.13	18.60	23.66
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

WPP1 VOC emissions = 24.17 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		23.66	(as propane)
Formaldehyde expressed as formaldehyde	+	0.16	
Acetaldehyde expressed as Acetaldehyde	+	0.14	
Methanol expressed as methanol***	+	0.30	
Subtract Methanol expressed as propane	-	0.089	

cc: Sean Taylor
Reference Number: 201701194

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (70%/30% Mix)
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 1, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	220	215	209	
GAS MOISTURE (%)	42.5	42.7	41.9	
GAS FLOW RATE (ACFM)	54561	53481	53075	
GAS FLOW RATE (DSCFM)	24250	23851	24219	
POLLUTANT CONCENTRATION (mg/DSCM)	1.95	1.09	2.25	1.76
EMISSION RATE (LB/HR)	0.18	0.10	0.20	0.16
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701195

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

OCT 19 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	ST01 Wood Dryer Stack (70%/30% Mix)			
POLLUTANT DETERMINED	Methanol			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 1, 2017			
DATE RECEIVED BY APB	September 28, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	220	215	209	
GAS MOISTURE (%)	42.5	42.7	41.9	
GAS FLOW RATE (ACFM)	54561	53481	53075	
GAS FLOW RATE (DSCFM)	24250	23851	24219	
POLLUTANT CONCENTRATION (mg/DSCM)	3.22	2.41	4.45	3.36
EMISSION RATE (LB/HR)	0.29	0.22	0.40	0.30
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701196

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

OCT 19 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain DM
FROM: Marie Miller MMM
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	ST01 Wood Dryer Stack (70%/30% Mix)
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 1, 2017
DATE RECEIVED BY APB	September 28, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	220	215	209	
GAS MOISTURE (%)	42.5	42.7	41.9	
GAS FLOW RATE (ACFM)	54561	53481	53075	
GAS FLOW RATE (DSCFM)	24250	23851	24219	
POLLUTANT CONCENTRATION (mg/DSCM)	2.12	1.24	1.25	1.54
EMISSION RATE (LB/HR)	0.19	0.11	0.11	0.14
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701197

AIRS Number: 00100032
Printed: 10/17/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

NOV 16 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-100% Hardwood
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 29, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	206	207	206	
GAS MOISTURE (%)	40.7	39.7	38.7	
GAS FLOW RATE (ACFM)	53116	52335	50874	
GAS FLOW RATE (DSCFM)	24796	24818	24536	
POLLUTANT CONCENTRATION (PPM Propane)	107	113	124	115
EMISSION RATE (LB/HR propane)	18.17	19.27	20.87	19.44
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

WPP1 VOC emissions = 22.33 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		19.44	(as propane)
Formaldehyde expressed as formaldehyde	+	1.2	
Acetaldehyde expressed as Acetaldehyde	+	0.76	
Methanol expressed as methanol***	+	1.33	
Subtract Methanol expressed as propane	-	0.396	

cc: Sean Taylor
Reference Number: 201701319

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	Wood Dryer Stack (ST01)-100% Hardwood			
POLLUTANT DETERMINED	Formaldehyde			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 29, 2017			
DATE RECEIVED BY APB	October 30, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	206	207	206	
GAS MOISTURE (%)	40.7	39.7	38.7	
GAS FLOW RATE (ACFM)	53116	52335	50874	
GAS FLOW RATE (DSCFM)	24796	24818	24536	
POLLUTANT CONCENTRATION (mg/M3)	9.59	14.07	15.32	12.99
EMISSION RATE (LB/HR)	0.89	1.31	1.41	1.20
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701320

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	Wood Dryer Stack (ST01)-100% Hardwood			
POLLUTANT DETERMINED	Methanol			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 29, 2017			
DATE RECEIVED BY APB	October 30, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	206	207	206	
GAS MOISTURE (%)	40.7	39.7	38.7	
GAS FLOW RATE (ACFM)	53116	52335	50874	
GAS FLOW RATE (DSCFM)	24796	24818	24536	
POLLUTANT CONCENTRATION (mg/M3)	12.03	14.10	17.07	14.40
EMISSION RATE (LB/HR)	1.12	1.31	1.57	1.33
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701321

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-100% Hardwood
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 29, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	206	207	206	
GAS MOISTURE (%)	40.7	39.7	38.7	
GAS FLOW RATE (ACFM)	53116	52335	50874	
GAS FLOW RATE (DSCFM)	24796	24818	24536	
POLLUTANT CONCENTRATION (mg/M3)	5.90	7.97	10.79	8.22
EMISSION RATE (LB/HR)	0.55	0.74	0.99	0.76
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701322

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain DM
FROM: Marie Miller MM
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-80%/20% Mix
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	204	
GAS MOISTURE (%)	38.7	39.6	39.5	
GAS FLOW RATE (ACFM)	53751	51269	50555	
GAS FLOW RATE (DSCFM)	26121	24589	24304	
POLLUTANT CONCENTRATION (PPM Propane)	153	152	118	141
EMISSION RATE (LB/HR propane)	27.33	25.64	19.62	24.20
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

WPP1 VOC emissions = 27.65 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		24.2	(as propane)
Formaldehyde expressed as formaldehyde	+	1.17	
Acetaldehyde expressed as Acetaldehyde	+	0.73	
Methanol expressed as methanol***	+	2.2	
Subtract Methanol expressed as propane	-	0.655	

cc: Sean Taylor
Reference Number: 201701323

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets			
COMPANY LOCATION	Baxley, GA			
SOURCE TESTED	Wood Dryer Stack (ST01)-80%/20% Mix			
POLLUTANT DETERMINED	Formaldehyde			
REPORT REVIEWED BY	Marie Miller			
TEST WITNESSED BY	Not Witnessed			
DATE(S) OF TEST	August 30, 2017			
DATE RECEIVED BY APB	October 30, 2017			
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR			
OPERATING CAPACITY	18 ODT/HR			
ALLOWABLE EMISSION RATE	N/A			
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0			
CONTROL EQUIPMENT AND MONITORING DATA	N/A			
TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	204	
GAS MOISTURE (%)	38.7	39.6	39.5	
GAS FLOW RATE (ACFM)	53751	51269	50555	
GAS FLOW RATE (DSCFM)	26121	24589	24304	
POLLUTANT CONCENTRATION (mg/M3)	12.11	12.28	13.22	12.54
EMISSION RATE (LB/HR)	1.18	1.13	1.20	1.17
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701324

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

NOV 16 2017

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-80%/20% Mix
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	204	
GAS MOISTURE (%)	38.7	39.6	39.5	
GAS FLOW RATE (ACFM)	53751	51269	50555	
GAS FLOW RATE (DSCFM)	26121	24589	24304	
POLLUTANT CONCENTRATION (mg/M3)	25.74	22.57	21.92	23.41
EMISSION RATE (LB/HR)	2.52	2.08	2.00	2.20
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701325

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-80%/20% Mix
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	204	
GAS MOISTURE (%)	38.7	39.6	39.5	
GAS FLOW RATE (ACFM)	53751	51269	50555	
GAS FLOW RATE (DSCFM)	26121	24589	24304	
POLLUTANT CONCENTRATION (mg/M3)	6.77	8.42	8.30	7.83
EMISSION RATE (LB/HR)	0.66	0.78	0.76	0.73
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701326

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-70%/30% Mix
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	203	
GAS MOISTURE (%)	37.2	36.8	36.4	
GAS FLOW RATE (ACFM)	51694	51706	50184	
GAS FLOW RATE (DSCFM)	25709	25904	25335	
POLLUTANT CONCENTRATION (PPM Propane)	121	126	87	111
EMISSION RATE (LB/HR propane)	21.25	22.35	15.02	19.54
PERCENT ALLOWABLE (%)				

OTHER INFORMATION

WPP1 VOC emissions = 22.56 lb/hr

Equation 1 : WPP1 VOC emissions are the sum of

THC (M25A) expressed as propane		19.54	(as propane)
Formaldehyde expressed as formaldehyde	+	0.77	
Acetaldehyde expressed as Acetaldehyde	+	0.61	
Methanol expressed as methanol***	+	2.33	
Subtract Methanol expressed as propane	-	0.694	

cc: Sean Taylor
Reference Number: 201701327

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-70%/30% Mix
POLLUTANT DETERMINED	Formaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	203	
GAS MOISTURE (%)	37.2	36.8	36.4	
GAS FLOW RATE (ACFM)	51694	51706	50184	
GAS FLOW RATE (DSCFM)	25709	25904	25335	
POLLUTANT CONCENTRATION (mg/M3)	8.92	8.74	6.42	8.03
EMISSION RATE (LB/HR)	0.86	0.85	0.61	0.77
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701328

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

NOV 16 2017

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-70%/30% Mix
POLLUTANT DETERMINED	Methanol
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	203	
GAS MOISTURE (%)	37.2	36.8	36.4	
GAS FLOW RATE (ACFM)	51694	51706	50184	
GAS FLOW RATE (DSCFM)	25709	25904	25335	
POLLUTANT CONCENTRATION (mg/M3)	27.22	25.88	19.61	24.23
EMISSION RATE (LB/HR)	2.62	2.51	1.86	2.33
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701329

AIRS Number: 00100032
Printed: 11/15/2017

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404-363-7000

MEMORANDUM:

NOV 16 2017

TO: Farhana Yasmin
THROUGH: Daniel McCain
FROM: Marie Miller
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Appling County Pellets
COMPANY LOCATION	Baxley, GA
SOURCE TESTED	Wood Dryer Stack (ST01)-70%/30% Mix
POLLUTANT DETERMINED	Acetaldehyde
REPORT REVIEWED BY	Marie Miller
TEST WITNESSED BY	Not Witnessed
DATE(S) OF TEST	August 30, 2017
DATE RECEIVED BY APB	October 30, 2017
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	18 ODT/HR
ALLOWABLE EMISSION RATE	N/A
APPLICABLE REGULATION	Permit No. 2499-001-0032-B-01-0
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
GAS TEMPERATURE (°F)	204	204	203	
GAS MOISTURE (%)	37.2	36.8	36.4	
GAS FLOW RATE (ACFM)	51694	51706	50184	
GAS FLOW RATE (DSCFM)	25709	25904	25335	
POLLUTANT CONCENTRATION (mg/M3)	6.26	8.08	4.64	6.33
EMISSION RATE (LB/HR)	0.60	0.78	0.44	0.61
PERCENT ALLOWABLE (%)				
OTHER INFORMATION	N/A			

cc: Sean Taylor
Reference Number: 201701336

AIRS Number: 00100032
Printed: 11/16/2017

Attachment B, Part Two:
Enviva Wiggins Test

AIR EMISSION TEST REPORT
Wiggins, Mississippi Wood Pellet Production Facility
Enviva Pellets Wiggins, LLC

Submitted to

Enviva Pellets Wiggins, LLC

Submitted by

Air Control Techniques, P.C.
301 East Durham Road
Cary, NC 29513
(919) 460-7811

Report Submittal Date: October 31, 2013
(Revised November 14, 2013)
Air Control Techniques, P.C. File 1911

TABLE OF CONTENTS

TABLES

FIGURES

Definitions

Total Hydrocarbons	All organic compounds containing hydrogen and carbon that are detected by a flame ionization detector operated in accordance with U.S. EPA Method 25A.
Volatile Organic Compounds	All organic compounds that are emitted to the atmosphere in a gaseous or vapor form that can participate in photochemical reactions to produce ozone. All volatile organic compounds are considered VOCs unless specifically exempted in 40 CFR 51.100(s). Relevant excluded compounds include methane, ethane, and acetone.
VOC Emissions	Mass emissions of VOC measured on a pounds of carbon basis.

Acronyms

EPA	U.S. Environmental Protection Agency
FID	Flame Ionization Detector
FTIR	Fourier Transform Infrared Spectrometer
HAP	Hazardous Air Pollutant
MC	Moisture Content
MDEQ	Mississippi Department of Environmental Quality
ODT	Oven Dried Tons
THC	Total Hydrocarbons
VOC	Volatile Organic Compounds
C1	Carbon

Units of Measure

ppm	Parts per million (wet basis)
ppmvd	Parts per million (dry basis)
ppm C_3	Parts per million as propane
ppm C_1	Parts per million as carbon
mg	Milligram
kg	Kilogram
µg	Micrograms

Permit Designations/Titles

Dryer 1	AA-001, 30 MMBTU Wood-Fired Dryer (No. 1) with a Multiclone
Dryer 2	AA-002, 45 MMBTU Wood Fired Dryer (No. 2) with a Cyclone
Dry Hammermill 1	AA-006, No. 1 Secondary Hammermill w/High-Eff. Cyclone
Dry Hammermill 2	AA-007, No. 2 Secondary Hammermill w/High-Eff. Cyclone
Pellet Cooler 1	AA-004, Includes Line 1 Press Aspiration (AA-012)
Pellet Cooler 2	AA-014, Pellet Cooler 2 w/Hi-Efficiency Cyclone
Aspiration System	AA-013, Line 2 Pellet Mill Aspiration System
Green Hammermill	AA-016 (Hammermill Bin)

Air Emission Test Report
Wiggins, Mississippi Wood Pellet Production Facility

1. SUMMARY

Enviva Pellets, Wiggins, LLC (Enviva) has sponsored air emission testing to satisfy the requirements of Agreed Order 6366-13 dated June 16, 2013 (the "Order"). These test results are being submitted to the Mississippi Department of Environmental Quality (MDEQ) by October 31, 2013 in accordance with the Order.

The scope of the testing program included volatile organic compounds (VOCs) and six organic hazardous air pollutants (HAPs). Annual emissions of each analyte have been calculated and compared to applicable permit limits. The results of the testing program are summarized in Table 1-1 based on the present maximum permitted production limit of 185,550 ODT per year in the permit.

Table 1-1. Total Emissions at Plant Permit Limit of 185,550 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	66.3	57.6	11.1	21.1	15.7	7.8	46.4	7.4	233.5
Organic HAPs									
Methanol	1.85	7.26	0.08	0.27	0.16	0.24	0.34	0.05	10.3
Acetaldehyde	0.00	1.40	0.25	0.61	0.39	0.35	0.23	0.17	2.0
Acrolein	1.03	2.32	0.43	1.24	0.77	0.68	0.20	0.29	7.0
Formaldehyde	2.01	3.48	0.39	0.37	0.49	0.34	0.03	0.26	7.4
Phenol	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.4
Propionaldehyde	1.06	1.82	0.17	0.09	0.16	0.11	0.00	0.11	3.5
Total HAPS	5.96	14.87	1.32	2.59	2.35	1.72	0.80	0.88	31.89

At the current maximum permitted production limit, VOC emissions remain below the PSD threshold of 250 tons per year. However, HAP emissions exceed the 25 ton per year threshold for major source classification, and methanol exceeds the 10 ton per year single compound threshold for major source classification. Importantly, the plant has never operated at the maximum permitted production limit of 185,550 ODT per year.

Enviva plans to propose to MDEQ a new maximum permitted production limit of 140,000 ODT/year. VOC and HAP emissions based on this proposed maximum permitted production limit are summarized in Table 1-2. Like the current limit of 185,000 ODT/year, to date, the Wiggins plant has also never achieved 140,000 ODT/year.

VOC emissions at the newly proposed production rate limit would be well below the PSD threshold of 250 tons per year. Furthermore, combined HAPs emissions are less than 25 tons per year, and none of the HAPs are emitted at more than 10 tons per year. Because the plant has never achieved a production rate of 140,000 ODT/year, the plant has never exceeded the major source threshold for VOCs or HAPs.

Table 1-2. Total Emissions at Plant Permit Limit of 140,000 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	50.1	43.4	8.4	15.9	11.7	5.9	35.0	5.6	175.9
Organic HAPs									
Methanol	1.40	5.48	0.06	0.21	0.12	0.18	0.26	0.04	7.7
Acetaldehyde	0.00	1.06	0.19	0.46	0.29	0.26	0.17	0.12	2.6
Acrolein	0.78	1.75	0.33	0.93	0.58	0.51	0.15	0.22	5.3
Formaldehyde	1.52	2.62	0.30	0.28	0.37	0.26	0.03	0.20	5.6
Phenol	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.3
Propionaldehyde	0.80	1.37	0.13	0.07	0.12	0.08	0.00	0.08	2.7
Total HAPS	4.50	12.28	0.99	1.95	1.78	1.30	0.61	0.66	24.06

These tests were conducted in accordance with the emission test protocol[1] submitted to MDEQ on July 31, 2013. The scope of the emission test program was increased since submittal of the test program protocol in order to ensure that Enviva evaluated emissions from all possible sources of VOCs and HAPs.

The air emission tests were conducted by Air Control Techniques, P.C. using EPA Reference Methods 1, 2, 3, 4, 25A, and 320. The emission tests were conducted from Thursday, October 10 through Sunday, October 13, 2013. This report summarizes the emissions test data, quality assurance data, test method procedures, sampling equipment calibrations, process operating conditions, and test program participants.

2. EMISSION TEST PROGRAM DESCRIPTION

2.1 Wiggins, Mississippi Plant Description

Enviva operates a plant producing wood pellets. The plant consists of a wood receiving yard, log debarkers and chippers, two rotary dryers, two hammermills, two pellet presses and coolers, and an aspiration system. The plant processes wood composed of a range of hardwoods and softwoods.

2.2 Purpose and Scope of the Emission Test Program

Based on a voluntary self-evaluation, Enviva reported to the Mississippi Department of Environmental Quality (MDEQ) that it may have underreported emissions of volatile organic compounds (VOCs) in its permit application. Enviva's concern was based on a set of engineering-oriented tests [2] conducted in November 2012 that indicated that VOC emissions from a hammermill source and a press cooler aspiration vent may be higher than previously known. While emissions from specific wood pellet plants are highly dependent on the specific equipment employed and to a lesser degree the hardwood/softwood mix of raw material, Enviva's preliminary findings in the November 2012 engineering test are generally consistent with other recent findings in the Wood Pellet Industry, specifically the engineering-oriented tests[3] at a Georgia Biomass, Inc. plant in Waycross, Georgia and Green Circle Bio Energy in Cottondale, Florida.

This air emission testing program is intended to address Enviva's concern and fulfills the requirements of the Order. Specifically, Enviva agreed to generate VOC emissions data for the following sources.

- Dryer 1 multiclone stack
- Dryer 2 cyclone stack
- Secondary Hammermill 2 cyclone outlet
- Pellet Mill 2 Aspiration System

Since signing the Order, Enviva has determined that it would be beneficial to expand the scope of the emission testing program to include these three additional sources.

- Green Hammermill
- Pellet Cooler 1
- Pellet Cooler 2

The tests at Secondary Hammermill 2 cyclone outlet also represent emissions from Secondary Hammermill 1. Secondary Hammermill 2 is identical to Secondary Hammermill 1 except for the larger capacity of Secondary Hammermill 2.

2.3 Test Participants

The Enviva project manager for this project was Mr. Michael Doniger, Director of Plant Operations. He was assisted by Mr. Joe Harrell, Environmental Manager, Mr. Mike Jones, and Mr. Gary Williams, Wiggins Plant Manager.

Mr. Mike J. Doniger, Director, Plant Operations
Enviva, LP
7200 Wisconsin Avenue, Suite 1000
Bethesda, Maryland 20814
Phone: (301) 657 5560 Extension 163
Email: Michael.Doniger@envivabiomass.com

Mr. Joe Harrell, Environmental Manager
Enviva, LP
142 NC Route 561 East
Ahoskie, NC 27910 USA
Phone (252) 209-6032, Extension 202
Email: Joe.Harrell@envivabiomass.com

Mr. Gary Williams, Plant Manager
Enviva Pellets Wiggins, LLC
Wiggins, MS
Email: Gary.Williams@envivabiomass.com

Legal counsel for Enviva is Mr. Alan McConnell. Mr. McConnell participated in this study to ensure that it addressed the requirements of the Order.

Alan McConnell
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Raleigh, North Carolina 27609
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Enviva retained Air Control Techniques, P.C. to conduct the air emission testing program at the Wiggins plant. The Air Control Techniques, P.C. project manager was John Richards, Ph.D., P.E, QSTI. He was assisted by David Goshaw, P.E., QSTI, Todd Brozell, P.E., QSTI, and Jonas Gilbert. Tom Holder, QSTI provided quality assurance services for the test program. Contact information for Air Control Techniques, P.C. includes the following.

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Enthalpy, Inc. provided the laboratory analyses of the samples. The Enthalpy project manager for this project was Mr. Bryan Tyler. He was assisted by Dr. Grant Plummer, Mr. Clint Thrasher, and Mr. Steve Eckert, President.

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3. TEST MATRIX AND TEST RESULTS

3.1 Test Matrix

Table 3-1 summarizes the test program analytes, sampling methods, and analytical methods used for the seven sources listed in Section 1.1

Table 3-1. Test Matrix, Air Emission Testing
Enviva Pellets, Wiggins, Mississippi

Analyte	Test Method	Number of Runs	Run Length	Analytical Method
Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, Propionaldehyde	EPA Method 320	3	60 min	FTIR
Gas Flow	EPA Method 2	3	60 min	Manometer
Gas Molecular Weight, Oxygen, Carbon Dioxide	EPA Method 3	3	60 min	Fyrite® Analyzer
Gas Moisture	EPA Method 4	3	60 min	Gravimetric
Total Hydrocarbons (THC)	EPA Method 25A	3	60 min	FID

The tests were conducted on Thursday, October 10 through Sunday October 13, 2013. During all of the tests, the plant operated with a 60% softwood/40% hardwood feed.

3.2 Test Results

The VOC and organic HAP test results and calculated annual emission rates are summarized in Tables 3-2 through 3-8. VOC and HAP emissions were measured simultaneously at each of the seven emission units tested.

The VOC emissions have been calculated based on the total hydrocarbon data provided by Method 25A. The Method 25A data have been converted from a wet to a dry basis to account for the moisture in the stack gas stream. Total hydrocarbon concentrations (THC) has been used as a surrogate for VOCs.

The VOC emission calculations do not include any corrections for methane, ethane, or acetone despite the fact that these compounds are detected by Method 25A but are not classified as VOCs. Accordingly, the reported VOC emissions are biased to higher-than-true levels to the extent that these three compounds affected the Method 25A results.

The Method 25A data reflect the combined THC concentrations consisting of (1) alpha and beta pinene, (2) numerous other terpenes such as limonene and 3-carene, and (3) the organic HAPs. The organic HAP emissions discussed later in this report are also classified as VOCs and represent a small fraction of the total VOC emissions reported.

Method 320 was used to measure six organic compounds. Several of the organic compounds were below the detection limits of Method 320 in this matrix of gaseous constituents. These non-detection concentrations are designated by shading in Tables 3-2 through 3-8.

Table 3-2. Green Hammermill[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/10/2013	10/10/2013	10/10/2013	N/A
Start	9:17	10:36	11:50	N/A
Stop	10:17	11:36	12:50	N/A
Throughput, tons/hour	36	36	36	36.0
Moisture Content Outlet, %wt.	47.15	47.15	47.15	47.2
Throughput, ODT/hour	19.026	19.026	19.026	19.0
ACFM	27,642	27,273	27,189	27,368.0
DSCFM	25,184	24,803	25,031	25,006
Stack Temperature, °F	70.8	70.6	70.9	70.8
O_2, %	20.9	20.9	20.9	20.9
% Moisture	3.41	3.62	2.37	3.1
VOC, ppmvd as Propane	31.9	33.4	27	30.8
VOC, ppmvd as C1	95.7	100.3	81.1	92.4
VOC, lbs/hour as C1	4.5	4.7	3.8	4.3
VOC, lbs/ODT	0.24	0.25	0.20	0.2
Methanol, ppmvd	0.53	0.48	0.39	0.46
Acetaldehyde, ppmvd	0.79	0.75	0.74	0.76
Acrolein, ppmvd	1.17	1.25	1.18	1.20
Formaldehyde, ppmvd	0.77	0.65	0.57	0.66
Phenol, ppmvd	0.91	0.91	0.90	0.91
Propionaldehyde, ppmvd	0.24	0.24	0.26	0.247
Methanol, lbs/hour	0.066	0.060	0.049	0.058
Acetaldehyde, lbs/hour	0.136	0.129	0.127	0.131
Acrolein, lbs/hour	0.257	0.274	0.259	0.263
Formaldehyde, lbs/hour	0.090	0.077	0.068	0.078
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.000	0.000	0.058	0.019
Methanol, lbs/ODT	0.003	0.003	0.002	0.003
Acetaldehyde, lbs/ODT	0.007	0.007	0.006	0.007
Acrolein, lbs/ODT	0.013	0.014	0.013	0.013
Formaldehyde, lbs/ODT	0.005	0.004	0.003	0.004
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.003	0.001

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-3. Dryer 1 Emissions[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/10/2013	10/11/2013	10/11/2013	N/A
Start	17:38	10:00	11:37	N/A
Stop	18:38	11:00	12:37	N/A
Throughput, tons/hour	8.5	8.45	9	8.7
Moisture Content Outlet, %wt.	15.5	14.36	18.9	16.3
Throughput, ODT/hour	7.18	7.24	7.30	7.2
ACFM	44,448	42,243	42,593	43,095
DSCFM	32,404	31,700	31,215	31,773
Stack Temperature, °F	146.3	150.1	147.3	147.9
O_2, %	19.0	17.0	17.0	17.7
% Moisture	16.07	12.79	15.23	14.7
VOC, ppmvd as Propane	79.5	71	67.4	72.6
VOC, ppmvd as C1	238.8	213.3	202.6	218.2
VOC, lbs/hour as C1	14.4	12.6	11.8	12.93
VOC, lbs/ODT	2.00	1.74	1.62	1.79
Methanol, ppmvd	3.00	1.95	1.88	2.28
Acetaldehyde, ppmvd	1.51	1.46	1.50	1.49
Acrolein, ppmvd	2.13	1.97	2.03	2.04
Formaldehyde, ppmvd	3.96	1.83	2.10	2.63
Phenol, ppmvd	2.43	2.34	2.41	2.39
Propionaldehyde, ppmvd	0.76	0.81	0.59	0.72
Methanol, lbs/hour	0.483	0.308	0.292	0.36
Acetaldehyde, lbs/hour	0.0	0.0	0.0	0.000
Acrolein, lbs/hour	0.598	0.0	0.0	0.199
Formaldehyde, lbs/hour	0.597	0.272	0.307	0.392
Phenol, lbs/hour	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/hour	0.222	0.233	0.167	0.207
Methanol, lbs/ODT	0.067	0.043	0.040	0.050
Acetaldehyde, lbs/ODT	0.0	0.0	0.0	0.000
Acrolein, lbs/ODT	0.083	0.0	0.0	0.028
Formaldehyde, lbs/ODT	0.083	0.038	0.042	0.054
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.031	0.032	0.023	0.029

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-4. Pellet Cooler 1[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/12/2013	10/12/2013	10/12/2013	N/A
Start	8:58	10:22	11:41	N/A
Stop	9:58	11:22	12:41	N/A
Throughput, tons/hour	4	4	4	4.0
Moisture Content Outlet, %wt.	7.9	7.9	7.9	7.9
Throughput, ODT/hour	3.68	3.68	3.68	3.68
ACFM	16,168	16,246	16,134	16,182.7
DSCFM	15,189	14,870	14,825	14,961
Stack Temperature, °F	82.3	94.8	97.7	91.6
O_2, %	20.9	20.9	20.9	20.9
% Moisture	3.35	3.68	2.79	3.27
VOC, ppmvd as Propane	40.4	34.6	36.7	37.2
VOC, ppmvd as C1	121.2	103.8	110.1	111.7
VOC, lbs/hour as C1	3.44	2.88	3.05	3.12
VOC, lbs/ODT	0.93	0.78	0.83	0.85
Methanol, ppmvd	0.56	0.34	0.36	0.42
Acetaldehyde, ppmvd	0.71	0.73	0.78	0.74
Acrolein, ppmvd	1.01	1.06	1.39	1.15
Formaldehyde, ppmvd	1.49	1.30	1.30	1.36
Phenol, ppmvd	1.03	1.02	1.01	1.02
Propionaldehyde, ppmvd	0.39	0.30	0.25	0.31
Methanol, lbs/hour	0.042	0.026	0.027	0.032
Acetaldehyde, lbs/hour	0.074	0.076	0.081	0.077
Acrolein, lbs/hour	0.135	0.141	0.184	0.153
Formaldehyde, lbs/hour	0.105	0.092	0.092	0.096
Phenol, lbs/hour	0.2	0.0	0.0	0.077
Propionaldehyde, lbs/hour	0.054	0.041	0.000	0.032
Methanol, lbs/ODT	0.011	0.007	0.007	0.009
Acetaldehyde, lbs/ODT	0.020	0.021	0.022	0.021
Acrolein, lbs/ODT	0.037	0.038	0.050	0.042
Formaldehyde, lbs/ODT	0.029	0.025	0.025	0.026
Phenol, lbs/ODT	0.063	0.000	0.0	0.021
Propionaldehyde, lbs/ODT	0.015	0.011	0.000	0.009

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-5. Dryer 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	N/A
Date	10/13/2013	10/13/2013	10/13/2013	N/A
Start	9:21	11:14	12:31	N/A
Stop	10:21	12:52	13:47	N/A
Throughput, tons/hour	14.5	11.2	11.3	12.3
Moisture Content Outlet, %wt.	18.5	13.45	13.75	15.2
Throughput, ODT/hour	11.82	9.69	9.75	10.4
ACFM	24,998	25,318	25,278	25,198.0
DSCFM	14,745	15,224	14,842	14,937
Stack Temperature, °F	174.3	154.9	171.8	167.0
O_2, %	16.5	17	17	16.8
% Moisture	29.04	29.86	29.64	29.5
VOC, ppmvd as Propane	129.4	115.8	138.1	127.8
VOC, ppmvd as C1	388.2	347.4	414.3	383.3
VOC, lbs/hour as C1	10.70	9.88	11.49	10.69
VOC, lbs/ODT	0.91	1.02	1.18	1.03
Methanol, ppmvd	26.5	14.5	15.3	18.795
Acetaldehyde, ppmvd	1.4	4.7	1.4	2.498
Acrolein, ppmvd	2.7	3.7	3.5	3.303
Formaldehyde, ppmvd	9.0	9.4	9.6	9.336
Phenol, ppmvd	3.9	4.0	4.0	3.944
Propionaldehyde, ppmvd	3.3	2.0	2.4	2.575
Methanol, lbs/hour	1.949	1.070	1.129	1.383
Acetaldehyde, lbs/hour	0.138	0.473	0.147	0.253
Acrolein, lbs/hour	0.345	0.476	0.456	0.425
Formaldehyde, lbs/hour	0.622	0.647	0.662	0.644
Phenol, lbs/hour	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/hour	0.445	0.262	0.322	0.343
Methanol, lbs/ODT	0.165	0.110	0.116	0.130
Acetaldehyde, lbs/ODT	0.012	0.049	0.015	0.025
Acrolein, lbs/ODT	0.029	0.049	0.047	0.042
Formaldehyde, lbs/ODT	0.053	0.067	0.068	0.062
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.038	0.027	0.033	0.033

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-6. Dry Hammermill 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/11/2013	10/11/2013	10/11/2013	N/A
Start	18:11	19:35	20:48	N/A
Stop	19:11	20:35	21:48	N/A
Throughput, tons/hour	11.18	11.22	11.12	11.2
Moisture Content Outlet, %wt.	10.2	10.3	10.2	10.2
Throughput, ODT/hour	10.04	10.06	9.99	10.0
ACFM	15,197	14,385	15,165	14,916
DSCFM	13,183	12,366	13,303	12,951
Stack Temperature, °F	122.4	128.4	116.4	122.4
O_2, %	20.9	20.9	20.9	20.9
% Moisture	4.25	4.18	4.18	4.20
VOC, ppmvd as Propane	26.3	31.0	25.5	27.6
VOC, ppmvd as C1	78.9	93	76.5	82.8
VOC, lbs/hour as C1	1.94	2.15	1.90	2.00
VOC, lbs/ODT	0.19	0.21	0.19	0.20
Methanol, ppmvd	0.20	0.22	0.21	0.21
Acetaldehyde, ppmvd	0.75	0.74	0.74	0.74
Acrolein, ppmvd	1.02	1.02	1.01	1.02
Formaldehyde, ppmvd	1.09	1.19	1.16	1.14
Phenol, ppmvd	1.13	1.13	1.13	1.13
Propionaldehyde, ppmvd	0.24	0.25	0.27	0.254
Methanol, lbs/hour	0.013	0.014	0.014	0.014
Acetaldehyde, lbs/hour	0.067	0.067	0.000	0.045
Acrolein, lbs/hour	0.118	0.118	0.000	0.078
Formaldehyde, lbs/hour	0.067	0.073	0.071	0.071
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.029	0.030	0.032	0.030
Methanol, lbs/ODT	0.001	0.001	0.001	0.0014
Acetaldehyde, lbs/ODT	0.007	0.007	0.000	0.0045
Acrolein, lbs/ODT	0.012	0.012	0.000	0.0078
Formaldehyde, lbs/ODT	0.007	0.007	0.007	0.0070
Phenol, lbs/ODT	0.000	0.000	0.000	0.0000
Propionaldehyde, lbs/ODT	0.003	0.003	0.003	0.0030

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-7. Pellet Cooler 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/11/2013	10/11/2013	10/11/2013	N/A
Start	13:43	15:08	16:39	N/A
Stop	14:43	16:08	17:39	N/A
Throughput, tons/hour	15.0	15.0	15.0	15.0
Moisture Content Outlet, %wt.	7.12	7.36	7.17	7.2
Throughput, ODT/hour	13.93	13.90	13.92	13.9
ACFM	13,252	12,718	12,831	12,934
DSCFM	10,938	10,543	10,488	10,656
Stack Temperature, °F	148.9	143.2	152.3	148.1
O_2, %	20.9	20.9	20.9	20.9
% Moisture	4.86	4.64	4.54	4.68
VOC, ppmvd as Propane	25.0	22.3	26.0	24.4
VOC, ppmvd as C1	75	66.9	78	73.3
VOC, lbs/hour as C1	1.53	1.32	1.53	1.46
VOC, lbs/ODT	0.11	0.09	0.11	0.10
Methanol, ppmvd	0.84	0.71	0.88	0.81
Acetaldehyde, ppmvd	0.90	0.87	0.83	0.87
Acrolein, ppmvd	1.36	1.27	1.39	1.34
Formaldehyde, ppmvd	1.12	0.69	1.93	1.25
Phenol, ppmvd	1.14	1.13	1.13	1.13
Propionaldehyde, ppmvd	0.26	0.26	0.38	0.30
Methanol, lbs/hour	0.046	0.039	0.048	0.044
Acetaldehyde, lbs/hour	0.068	0.065	0.062	0.065
Acrolein, lbs/hour	0.130	0.121	0.133	0.128
Formaldehyde, lbs/hour	0.058	0.035	0.099	0.064
Phenol, lbs/hour	0	0	0	0.000
Propionaldehyde, lbs/hour	0.026	0.000	0.037	0.021
Methanol, lbs/ODT	0.003	0.003	0.003	0.003
Acetaldehyde, lbs/ODT	0.005	0.005	0.004	0.005
Acrolein, lbs/ODT	0.009	0.009	0.010	0.009
Formaldehyde, lbs/ODT	0.004	0.003	0.007	0.005
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.002	0.000	0.003	0.002

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-8. Aspiration System[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/12/2013	10/12/2013	10/12/2013	N/A
Start	15:09	16:36	18:00	N/A
Stop	16:09	17:36	19:00	N/A
Throughput, tons/hour	15	15	15	15.0
Moisture Content Outlet, %wt.	7.12	8.83	7.85	7.93
Throughput, ODT/hour	13.93	13.68	13.82	13.8
ACFM	1,756	1,692	1,624	1,691
DSCFM	1,079	1,016	985	1,027
Stack Temperature, °F	148.6	148.3	152.1	149.7
O_2, %	20.9	20.9	20.9	20.9
% Moisture	27.67	29.33	28.19	28.4
VOC, ppmvd as Propane	1485.8	1354.2	1671.1	1,503.7
VOC, ppmvd as C1	4457.4	4062.6	5013.3	4,511.1
VOC, lbs/hour as C1	8.99	7.71	9.23	8.64
VOC, lbs/ODT	0.65	0.56	0.67	0.63
Methanol, ppmvd	11.5	12.6	11.4	11.81
Acetaldehyde, ppmvd	6.4	5.5	5.2	5.73
Acrolein, ppmvd	4.4	4.4	3.1	3.97
Formaldehyde, ppmvd	1.5	2.2	1.5	1.72
Phenol, ppmvd	3.8	3.9	3.8	3.81
Propionaldehyde, ppmvd	4.1	4.2	4.2	4.19
Methanol, lbs/hour	0.062	0.068	0.061	0.064
Acetaldehyde, lbs/hour	0.048	0.041	0.039	0.042
Acrolein, lbs/hour	0.041	0.042	0.030	0.037
Formaldehyde, lbs/hour	0.000	0.011	0.007	0.006
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.000	0.000	0.000	0.000
Methanol, lbs/ODT	0.004	0.005	0.004	0.005
Acetaldehyde, lbs/ODT	0.003	0.003	0.003	0.003
Acrolein, lbs/ODT	0.003	0.003	0.002	0.003
Formaldehyde, lbs/ODT	0.000	0.001	0.001	0.000
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

3.3 Emissions Data Evaluation

Method 25A VOC Concentrations

The VOC emissions from the various process units ranged from 0.10 to 1.79 pounds per ODT. VOC emissions were highest from the two dryers.

Dryer 1 had an emission rate of 1.79 pounds per ODT, and Dryer 2 had an emission rate of 1.03 pounds per ODT. This is equivalent to a 79% difference despite the fact that the dryers were handling similar hardwood/softwood blends and were generating wood with similar outlet moisture levels. The dryer outlet temperatures were also similar. These data clearly demonstrate that VOC emissions from the dryers are due to two factors: (1) the performance of the wood waste burner supplying the heat to the dryer, and (2) volatilization of VOCs from the wood in the dryer. Of these two sources, contributions of the burner are most important.

Due to the dominance of the burner in establishing the VOC emission rates from the combined burner/dryer source, the importance of the hardwood/softwood ratio is less important than previously thought. Changes in the hardwood/softwood ratio do not necessarily affect the VOC emissions from the burner.

The emissions of organic HAP compounds are not sensitive to the hardwood/softwood ratio. The data summarized in the Phase I report indicate that emissions of organic HAPs decreased slightly as the softwood content increased from 10% to 100%.

The data summarized in Tables 3-2 through 3-8 indicate that the total VOC emissions from the Wiggins Plant exceed 100 tons per year calculated as carbon. These tests confirm that the plant is a major source for VOCs.

The accuracy of the VOC data is demonstrated by a Method 25A response factor of approximately 1 for the group of compounds present in the gas stream. The Method 25A response is expressed in terms of a response factor that is defined as the observed Method 25A concentration divided by the true concentration. The Method 25A FID has a response factor close to 1.0 for a large set of organic compounds. Some high molecular weight organics have a response factor larger than 1, and in some cases, approaching 1.5. For these compounds, Method 25A is biased to higher-than-true concentrations. Some low molecular weight highly oxygenated organic compounds such as methanol and formaldehyde have very low response factors in the range of 0.1 to 0.4. For these compounds, Method 25A is biased to lower-than-true concentrations.

As part of the laboratory tests reported to MDEQ in Enviva's Phase I emission study dated July 31, 2013[4] (the "Phase I Study"). Air Control Techniques, P.C. has taken the following two independent approaches in assessing the Method 25A response factors: (1) direct measurement of the Method 25A response factor using an alpha-pinene gas standard, the dominant organic compound measured during the laboratory tests and (2) a comparison of the Method 25A concentration data with the summed concentrations of all of the specific organics measured simultaneously using NCASI Method 98.01 and EPA Method 18. The results of these response factor analyses are presented in Tables 3-9 and 3-10.

Table 3-9. Alpha-Pinene Method 25A Response Factor[1]	
Alpha-Pinene Gas Standard, as $C_{10}H_{16}$	259 ppm
Alpha-Pinene Gas Standard, as C_3	863 ppm
FID Response, as C_3	888 ppm
Response Factor as C_3	1.03

1. Note: This table was included in the Phase I Study report to MDEQ.

Table 3-10. Calculated Method 25A Response Factors in Phase I Laboratory Tests[1]					
Run	Process Type	Softwood Content, %	Method 25A versus Combined NCASI 98.01 and Method 18	Dominant Compounds	Other Important Compounds
4	Dryer	10	0.72	α-and β-Pinene	Acetone, Methanol
5	Dryer	10	0.70	α-and β-Pinene	Acetone, Methanol
6	Dryer	10	0.75	α-and β-Pinene	Methanol, Formaldehyde
21	Dryer	10	1.23	α-and β-Pinene	Acetone, Methanol
22	Press	10	1.05	α-and β-Pinene	Acetone, Methanol
7	Dryer	70	0.85	α-and β-Pinene	Acetone
8	Dryer	70	0.90	α-and β-Pinene	Acetone
9	Dryer	70	1.02	α-and β-Pinene	Acetone
10	Dryer	70	0.91	α-and β-Pinene	Acetone
24	Press	70	1.51	α-and β-Pinene	Acetone, Methanol
11	Dryer	100	0.99	α-and β-Pinene	Acetone
12	Dryer	100	0.96	α-and β-Pinene	Acetone
13	Dryer	100	0.85	α-and β-Pinene	Acetone
14	Dryer	100	0.87	α-and β-Pinene	Acetone
16	Dryer	100	1.09	α-and β-Pinene	Methanol, Acetone
19	Dryer	100	1.21	α-and β-Pinene	Methanol, Acetone
20	Press	100	1.13	α-and β-Pinene	Methanol, Acetone
Test Program Average			0.98		

1. Note: This table was included in the Phase I Study report to MDEQ.

The excellent agreement between the Method 25A total concentration and the combined concentrations of all of the organics measured by NCASI 98.01 and EPA Method 18 demonstrate that Method 25A is an appropriate VOC measurement technique for wood pellet production facilities.

Method 320 HAP Concentrations

At the maximum permitted production limit of 185,550 ODT per year, five of the six organic HAP compounds measured by Method 320 were each emitted at a rate less than 10 tons per year. The methanol emission rate at this production level was 11.0 tons per year. The combined emission rate of all six organic HAPs was slightly over 31.1 tons per year at the maximum permitted production rate.

The list of HAPs specifically included in the test protocol included methanol, acetaldehyde, acrolein, formaldehyde, phenol, and propionaldehyde. This list was compiled based on (1) the organic compounds identified in laboratory analyses of pellet production facilities emissions, (2) previous emission tests conducted in the Pellet Manufacturing Industry, and (3) organic HAPs identified in studies of other wood products industries—specifically, MDF production.

The results of this test program indicate that this list of HAPs compounds needs to be amended. Phenol was detected at low concentration in only one of the tests of the seven process units. Furthermore, propionaldehyde was not detected in most of the tests.

The low to non-detectable phenol emissions data are consistent with the results of the Phase I Study. Phenol was not identified at detectable concentrations in any of the laboratory studies summarized in the Phase I Study report. The emission rates of phenol reported in the November 2012 Wiggins report [2] ranged from 0.0002 to 0.0018 pounds per hour—all insignificant emission rates. Phenol was also not listed in previous emission tests reviewed in preparation for this test program. Phenol was included in the test protocol primarily because other researchers such as Beauchemin and Tampier,[5] Milot, [6] and Milot and Mosher [7] listed phenol due to its inclusion in tests conducted at MDF and particleboard facilities. However, phenol emissions in MDF and particleboard production are due to the use of phenolic resins and similar binders. There is no reason to expect any appreciable phenol formation in pellet production considering (1) the lack of binders of any type in pellet production, (2) the higher moisture levels in pellet production as compared to MDF and particleboard processes, and (3) the lower material temperatures in pellet process equipment. Air Control Techniques, P.C. has assigned zero values to non-detected concentrations.

Acetaldehyde, propionaldehyde, and acrolein had very low concentrations in most of the emission tests summarized in this report. The IR absorption spectra of both water and the terpene compounds overlap the absorption spectra of acetaldehyde, propionaldehyde, and acrolein. Accordingly, the reported concentrations of these three compounds are biased to higher-than-true levels to the extent that this interference could not be avoided by Method 320 spectral absorption modeling. Zero values have been assigned when these concentrations were below detection limits of Method 320 due, in part, to the interference bias.

The use of zero values for non-detected compounds is an appropriate approach for any source, such as pellet production, where there are a few dominant compounds (i.e. methanol and formaldehyde) and a large number of possible compounds at extremely low levels such as phenol, acetaldehyde, and propionaldehyde. The use of non-detect or one-half non-detect concentrations in emission calculations for a large number of compounds potentially present at trace levels inherently makes any source “major” regardless of the actual emissions, size, or operations characteristics of the emission unit.

3.4 VOC and Organic HAP Emission Summary

Table 3-11 summaries annual emissions of VOC and organic HAP compounds. The annual emission rates are based on operation at the permit limited production rate of 185,550 ODT.

As discussed, the plant has never operated at the maximum permitted production limit of 185,550 ODT per year. The VOC and HAP emissions based on the newly proposed maximum production rate of 140,000 ODT/year are summarized in Table 3-12.

The VOC emissions at the lower production rate are well below the PSD threshold of 250 tons per year. The combined HAPs emissions are less than 25 tons per year, and none of the HAPs are emitted at more than 10 tons per year. Accordingly, at this production limit, the plant is not above the major source threshold for HAPs.

Table 3-11. Total Emissions at Plant Permit Limit of 185,550 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	66.3	57.6	11.1	21.1	15.7	7.8	46.4	7.4	233.5
Organic HAPs									
Methanol	1.85	7.26	0.08	0.27	0.16	0.24	0.34	0.05	10.3
Acetaldehyde	0.00	1.40	0.25	0.61	0.39	0.35	0.23	0.17	2.0
Acrolein	1.03	2.32	0.43	1.24	0.77	0.68	0.20	0.29	7.0
Formaldehyde	2.01	3.48	0.39	0.37	0.49	0.34	0.03	0.26	7.4
Phenol	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.4
Propionaldehyde	1.06	1.82	0.17	0.09	0.16	0.11	0.00	0.11	3.5
Total HAPS	5.96	14.87	1.32	2.59	2.35	1.72	0.80	0.88	31.89

Table 3-12. Total Emissions at Plant Permit Limit of 140,000 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
VOC Total	50.1	43.4	8.4	15.9	11.7	5.9	35.0	5.6	175.9
Organic HAPs									
Methanol	1.40	5.48	0.06	0.21	0.12	0.18	0.26	0.04	7.7
Acetaldehyde	0.00	1.06	0.19	0.46	0.29	0.26	0.17	0.12	2.6
Acrolein	0.78	1.75	0.33	0.93	0.58	0.51	0.15	0.22	5.3
Formaldehyde	1.52	2.62	0.30	0.28	0.37	0.26	0.03	0.20	5.6
Phenol	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.3
Propionaldehyde	0.80	1.37	0.13	0.07	0.12	0.08	0.00	0.08	2.7
Total HAPS	4.50	12.28	0.99	1.95	1.78	1.30	0.61	0.66	24.06

4. SAMPLING LOCATIONS

4.1 Dryer # 1 Stack Sampling Location

The Dryer 1 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-1. Twelve sampling points were used to measure the gas flow rate.

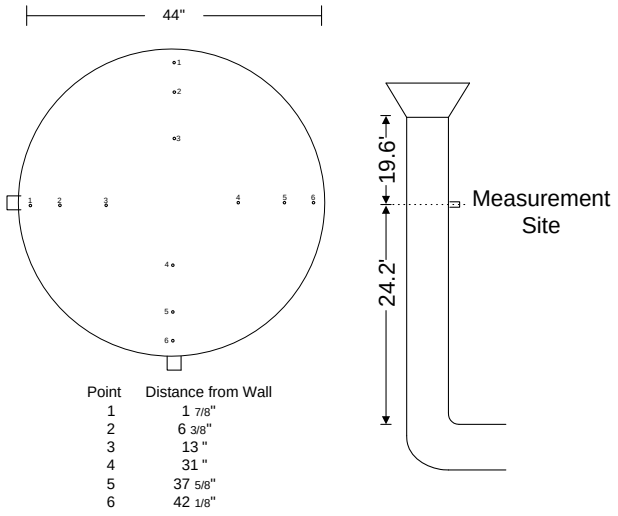


Figure 4-1 Dryer # 1 Stack Sampling Location

The downstream[1] flow disturbance is the stack discharge. The upstream flow disturbance is the duct from the fan entering the base of the stack.

During the sampling program, only the port facing south was used. The port facing east was blocked by the stack support equipment and the Dry Hammermill 1 ductwork. Test personnel reached all of the sampling ports by angling the probe inserted through the south port.

No cyclonic flow conditions were observed in the Dryer 1 stack. The point-by-point cyclonic flow checks indicated an average flow angle 3.1 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dryer 1 stack is shown in Figure 4-2.

Figure 4-2. Photograph of the Dryer 1 Stack

[1] "Upstream" and "downstream" are defined based on the sampling location as the reference point.

4.2 Dryer 2 Stack Sampling Location

The Dryer 2 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-2. Twelve sampling points were used to measure the gas flow rate.

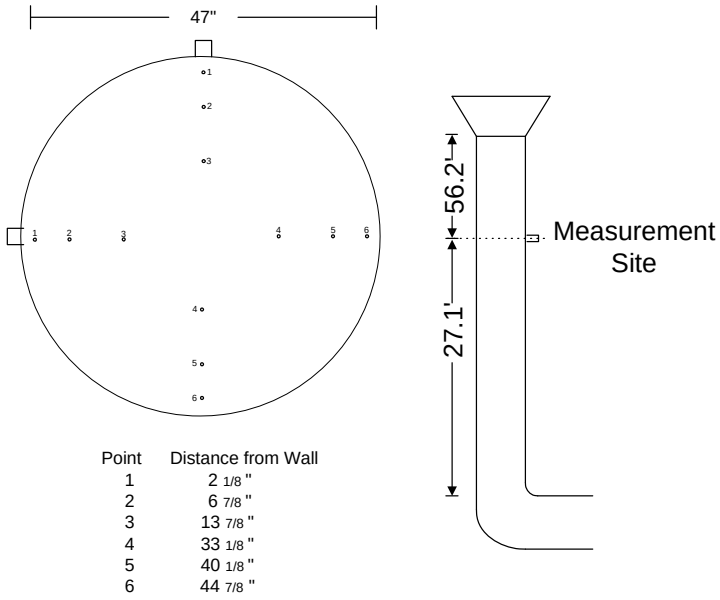


Figure 4-3. Dryer # 2 Stack Sampling Location

The downstream flow disturbance is the stack discharge. The upstream flow disturbance is the duct from the fan entering the base of the stack.

During the sampling program, only the port facing west was used in the test program. The port facing north could not be reached without potentially interrupting operation of the CEM sampling equipment. Test personnel reached all of the sampling ports by angling the probe inserted through the west port.

No cyclonic flow conditions were observed in the Dryer 2 stack. The point-by-point cyclonic flow checks indicated an average flow angle 2.4 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dryer 2 stack is shown in Figure 4-4.

Figure 4-4. Photograph of the Dryer 2 Stack

4.3 Dry Hammermill 2 Cyclone Outlet Sampling Location

The Dry Hammermill 2 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-5. Twelve sampling points were used to measure the gas flow rate.

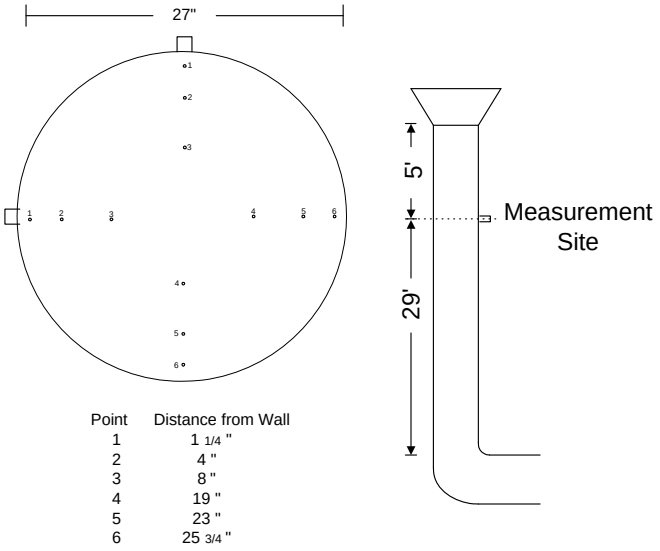


Figure 4-5. Dry Hammermill 2 Sampling Location

The downstream flow disturbance is an elbow in the fan outlet duct. The upstream flow disturbance is the fan discharge. During the sampling program both ports were accessible.

No cyclonic flow conditions were observed in the Dry Hammermill 2 stack. The point-by-point cyclonic flow checks indicated an average flow angle of 0.6 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dry Hammermill 2 stack is shown in Figure 4-6.

Figure 4-6. Photograph of the Dry Hammermill 2 Sampling Location

4.4 Pellet Mill Aspiration System Sampling Location

The Pellet Mill Aspiration System has a six-inch diameter. Gas flow rate sampling was performed in general accordance with EPA Method 1A. The sampling port location met EPA Method 1 location requirements as indicated in Figure 4-7. A total of eight sampling points were used—four in a horizontal direction and four reached by an angled probe in the vertical direction. Due to the position of the duct and surrounding equipment, it was not possible to sample from any orientation except horizontal.

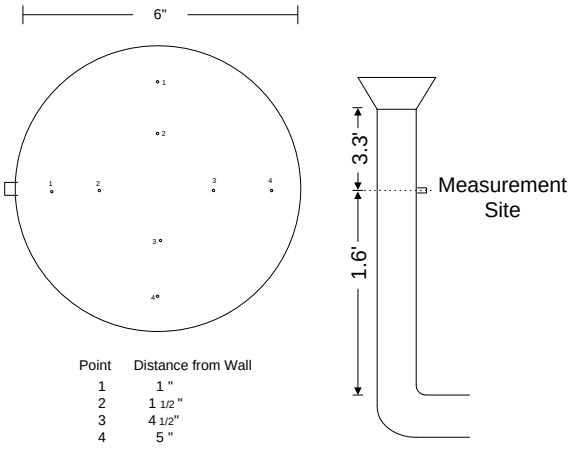


Figure 4-7. Pellet Mill Aspiration System Sampling Location

The upstream flow disturbance was an entry duct from Pellet Mill 6. The downstream flow disturbance was the fan inlet.

No cyclonic flow conditions were observed in the Pellet Mill Aspiration System outlet duct. The point-by-point cyclonic flow checks indicated an average flow angle of 0.75 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Mill Aspiration System sampling location is shown in Figure 4-8.

Figure 4-8. Photograph of the Pellet Mill Aspiration System Sampling Location

4.5 Pellet Mill 2 Cooler Stack Sampling Location

The Pellet Mill 2 Cooler stack sampling location meets the minimum requirements specified in Method 1, Section 11.1. As indicated in Figure 4-9, the downstream[2] disturbance (stack exit) is 0.6 stack diameters from the sampling location. The minimum allowed by Method 1 is 0.5 stack diameters. The upstream flow disturbance was the fan outlet duct. The distance to the upstream flow disturbance meets Method 1 requirements. Both sampling ports were used in the test program.

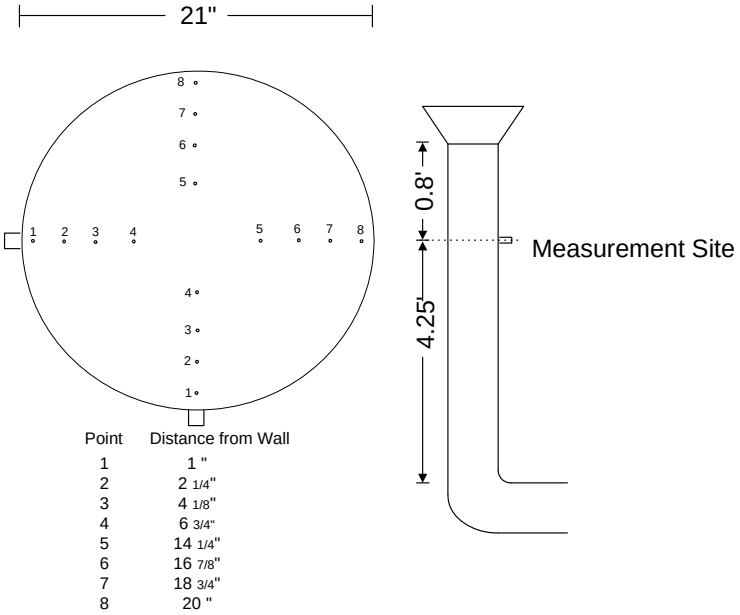


Figure 4-9. Pellet Mill 2 Cooler Stack Sampling Location

No cyclonic flow conditions were observed in the Pellet Mill 2 Cooler stack. The point-by-point cyclonic flow checks indicated an average flow angle of 1.5 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Cooler 2 stack is shown in Figure 4-10

Figure 4-10. Photograph of the Pellet Cooler 2 Stack

[2] The terms "upstream" and 'downstream" are defined based on the test location as the reference point. A recent change in a figure in EPA Method 1 has these terms incorrectly stated.

4.6 Pellet Mill 1 Cooler Stack

The Pellet Mill 1 Cooler stack sampling location meets the minimum requirements specified in Method 1, Section 11.1. As indicated in Figure 4-11, the downstream disturbance (stack exit) is 0.6 stack diameters from the sampling location. The minimum allowed is 0.5 stack diameters. The upstream flow disturbance is the fan outlet duct. The distance to the upstream flow disturbance meets Method 1 requirements. Four of the six sampling ports were used in the test program. The plugs in two of the ports could not be removed.

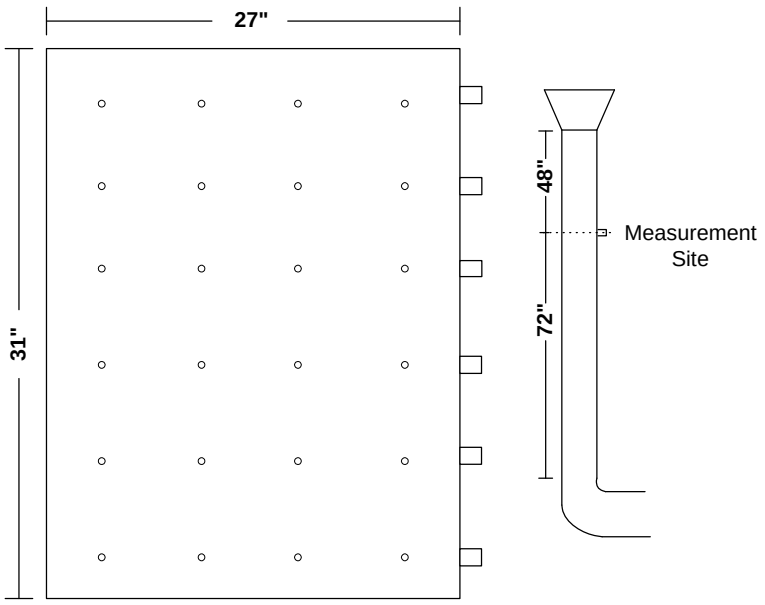


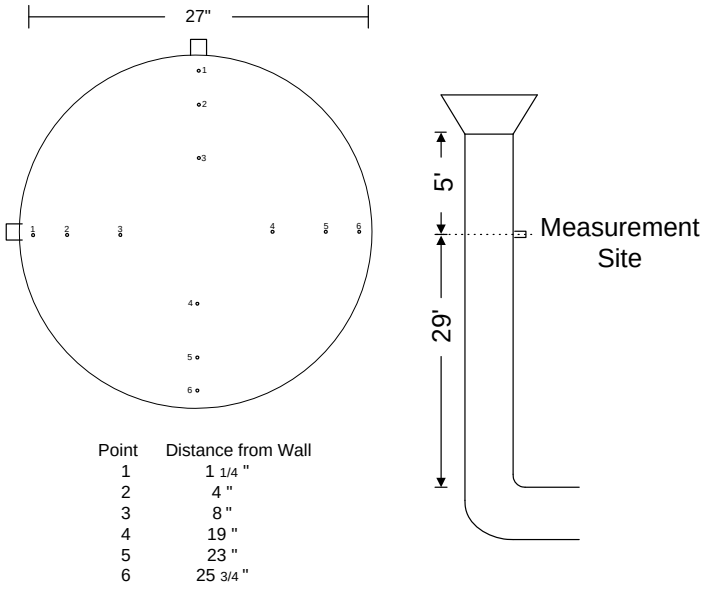
Figure 4-11. Pellet Mill 1 Cooler Stack Sampling Location

No cyclonic flow conditions were observed in the Pellet Mill 1 Cooler stack. The point-by-point cyclonic flow checks indicated an average flow angle of 2.0 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Mill 1 Cooler Stack is shown in Figure 4-12.

Figure 4-12. Photograph of the Pellet Mill 1 Cooler Stack

4.7 Green Hammermill Stack Sampling Location

The Green Hammermill stack sampling location shown in Figure 4-13 meets the minimum requirements for a downstream flow disturbance specified in Method 1, Section 11.1. The upstream flow disturbance is the fan outlet duct. The downstream flow disturbance is the stack discharge. The distance to the upstream flow disturbance meets Method 1 requirements. Only one sampling port could be reached safely. All of the sampling ports were reached by angling the Pitot tube inserted through the port facing south.



Point	Distance from Wall
1	1 1/4 "
2	4 "
3	8 "
4	19 "
5	23 "
6	25 3/4 "

Figure 4-13. Green Hammermill Stack Sampling Location

No cyclonic flow conditions were observed in the Green Hammermill stack. The point-by-point cyclonic flow checks indicated an average flow angle of 1.7 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Green Hammermill stack is shown in Figure 4-14.

Figure 4-14. Photograph of the Green Hammermill Fan Inlet

5. TESTING PROCEDURES

5.1 Flue Gas Velocity and Volumetric Flow Rate - EPA Method 2

The flue gas velocities and volumetric flow rates during all of the emission tests were determined according to the procedures outlined in U.S. EPA Reference Method 2. Velocity measurements were made using S-Type Pitot tubes conforming to the geometric specifications outlined in Method 2. Accordingly, each Pitot was assigned a coefficient of 0.84. Velocity pressures were measured with fluid manometers. Effluent gas temperatures were measured with chromel-alumel thermocouples attached to digital readouts.

5.2 Flue Gas Composition and Molecular Weight - EPA Method 3

Flue gas analyses and calculation of flue gas dry molecular weights were performed in accordance with EPA Method 3. A stainless steel probe was inserted into the gas stream to collect a representative sample of the flue gas during each test run. The samples were analyzed using a Fyrite gas analyzer. Moisture was removed from the sample gas by means of a knockout jar located prior to the sample pump.

5.3 Flue Gas Moisture Content - EPA Method 4

The flue gas moisture content was determined in conjunction with each test run according to the sampling and analytical procedures outlined in EPA Method 4. Wet impinger sampling trains were used to withdraw and analyze the stack gas. The impingers were connected in series and contained water in the first two impingers followed by an empty impinger and then a silica gel impinger. The impingers were contained in an ice bath to assure condensation of the flue gas stream moisture. Any moisture that was not condensed in the impingers was captured in the silica gel; therefore, all moisture was weighed and entered into moisture content calculations.

5.4 Total Hydrocarbons – EPA Method 25A

Continuous emissions monitoring was conducted for volatile organic compounds. The sampling and analytical procedures for VOCs were conducted in accordance with EPA 25A. The CEM system consisted of a sample acquisition system, the THC emission monitor, and a data acquisition system (DAS). A California Analytical Model 300 flame ionization detector was used for the Method 25A tests.

The sample acquisition system included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a heat-traced Teflon® sample line, a Teflon® heated-head pump, and a gas manifold board. All components of the sample acquisition system that contacted the sampled gas were constructed of Type 316 stainless steel or Teflon®. The sample gas was continuously extracted from a central point within the duct at a constant rate (±10%) for the duration of each test run. The wet, filtered gas was transported to a heated-head pump located at the CEM laboratory. The sample gas was sent directly to the VOC analyzer. Care was taken to ensure that the sample gas was greater than 250°F during transport from the stack to the VOC monitor. All pretest and posttest calibration procedures were performed as outlined in the EPA Reference Method 25A.

Total organic hydrocarbon concentrations were measured on a wet basis using a California Analytical 300 FID continuous emission monitor. The THC concentrations were monitored on a propane (C_3) basis using a flame ionization detector (FID). The FID was fueled by a gas mixture consisting of 40% helium and 60% hydrogen to reduce the effect of oxygen synergism. The

THC analyzer was calibrated with a set of at least four gas standards. Calibration tests were performed prior to and following each test run.

Outputs from the individual emission monitors were connected to a computerized data acquisition system. Outputs from the analyzer were sent to a portable computer via a National Instruments™ FieldPoint controller. The signals were downloaded to a STRATA© software program every two seconds. The two-second readings were averaged for the duration of the test run.

Total mass emissions of VOCs were determined based on the Method 25A total hydrocarbon concentration data. The mass emissions were expressed on a pounds mass of carbon per hour.

5.5 Organic HAP Compounds – EPA Method 320

Testing for wet-basis organic HAP concentrations was conducted by extractive Fourier transform infrared (FTIR) spectroscopy using EPA Method 320 (40CFR, Part 63, Appendix A). Sample gas was continuously passed through the sampling system, which included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a Teflon® heat-traced sample line, a MIDAC Fourier Transform Infrared (FTIR) spectrometer, a Teflon® heated-head pump, and a gas manifold board as shown in Figure 5-1. All components of the sample acquisition system that contacted the sampled gas were Type 316 stainless steel or Teflon®. All components of the sampling system and the FTIR cell were maintained at or above 120° C. Air Control Techniques, P.C. took great care to ensure that the sampling system contained no "cold spots" to prevent organic HAP loss. The sampling rate was maintained at approximately 10 liters per minute.

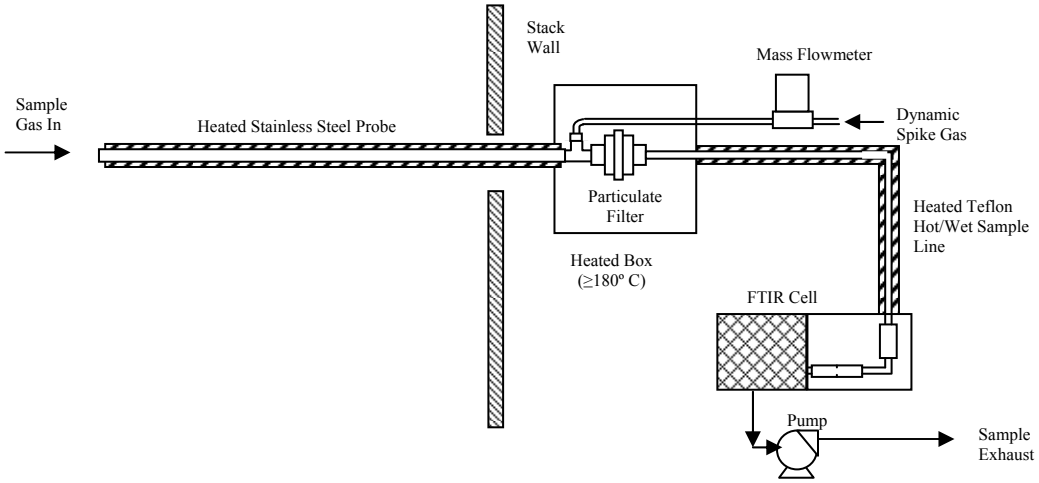


Figure 5-1. Method 320 Organic HAP Sampling System

The FTIR system included a MIDAC Corporation I-1301 spectrometer equipped with a heated, nominal 10-meter path absorption cell, a potassium bromide (KBr) beam splitter, zinc selenide (ZnSe) non-hygroscopic windows, and a liquid nitrogen-cooled Mercury Cadmium Telluride detector. Measurements were made using a MIDAC Model I-1301 high resolution Michelson interferometer with AutoQuant Pro software. Sample gas continuously passed through the sampling system, and sample spectra (based on 50 co-added interferograms) were recorded every

minute. The system's nominal spectral resolution was 0.5 cm^{-1}. Samples and standards were analyzed at temperatures greater than 120°C and near ambient pressures.

The inside walls of the cells were polished stainless steel to minimize interaction of the sample with the cell walls, and the cell mirrors were of bare gold. The gas pressure in the FTIR sample cell was monitored with a pressure transducer connected directly to the sample cell. The heated sample cell was wrapped in an insulating thermal jacket, and the temperature was controlled with type J thermocouples. The absorption cell volume was approximately 2 liters.

The FTIR system was operated via a portable computer, and a data archive storage system (USB Mass Storage Drive) was used for data backup. All interferograms, single beams, absorbance spectra, and background single beams were stored and have been archived. The filename, time, pressure and temperature of the sample cell, scan rate, background identification and other pertinent information was recorded by hand during the test program.

Air Control Techniques used the program AutoquantPro™ Version 4.5.0.195, (©Midac Corporation, 2012) to collect and analyze all the infrared field data. The program allows the development and storage of analytical "methods" for analysis of spectral data (absorbance) files. The reference spectra used for these analyses were developed by MIDAC Corporation, EPA, and Enthalpy Analytical, Inc. One "model" was developed for determining the absorption path length and one additional "method" for determining the concentrations of the target compounds for each source.

The concentration uncertainty reported by AutoquantPro is called the Standard Error of the Estimated Concentration, or SEC; it is also known as the Marginal Standard Deviation. The uncertainties in the concentration are proportional to the square root of the sums of the squares of the residual. After the residual spectrum is obtained, which we will call R, the error variance for the case of a single reference spectrum is calculated as follows.

$$\sigma^2 = \frac{\sum_i R_i^2}{(n-1)}$$

Where n is the number of observations. The SEC is given by the following.

$$SEC = \frac{\sigma\, C}{\sqrt{\sum_i \mathrm{A}_i^2}}$$

Where **A** is the spectrum and **C** is the known concentration of the reference.

The 95% confidence interval is 1.96 times the SEC.

6. QUALITY ASSURANCE

6.1 Method 1 Quality Assurance

All S-type Pitot tubes used in this project conformed to EPA guidelines concerning construction and geometry. Pitot tubes were inspected prior to use. Information pertaining to S-type Pitot tubes is presented in detail in Section 3.1.1 of EPA Publication No. 600/4-77-027b. Only S-type Pitot tubes meeting the required EPA specifications were used in this project.

The thermocouples used in this project were calibrated using the procedures described in Section 3.4.2 of EPA Publication No. 600/4-77-027b. Each temperature sensor was calibrated at a minimum of three points over the anticipated range of use against NIST-traceable mercury in glass thermometer.

6.2 Method 4 Quality Assurance

Pretest and posttest leak checks were conducted on each Method 4 sampling train used. The observed leak rates for the sampling trains were below 0.02 actual cubic feet per minute as required by Method 4.

All dry gas meters were fully calibrated to determine the volume correction factor prior to field use. Post-tests calibration checks were performed as soon as possible after the equipment was returned to the laboratory. Pre-and post-test calibrations agreed within ±5 percent. The calibration procedure is documented in Section 3.3.2 of EPA Publication No. 600/4-77-237b.

The scales used at the test location to determine flue gas moisture content were calibrated using a standard set of weights.

6.3 Method 25A Quality Assurance

At the beginning of the test day, a linearity calibration test was performed on each analyzer. The continuous emission monitoring instrument response did not differ by more ±5 from the propane calibration standard. Linearity results for the test program are provided in Table 6-1 through 6-8.

Prior to and following each test run, a system calibration test was performed. The system test was performed to verify that the sampling system did not contain leaks (system bias) and to measure a change in analyzer response during the test program (system drift). The system bias was less than ±5% of full-scale, and system drift was less than ±3% of full scale. System calibration results for the test program are provided in Tables 6-1 through 6-8.

Table 6-1. Dryer 1 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.8	0.1
Zero Bias (Post), %	±5	0.9	0.1	0.0
Up-scale Bias (Pre), %	±5	0.0	-0.2	-0.6
Up-scale Bias (Post), %	±5	0.1	-0.6	-1.0
Zero Drift, %	±3	0.9	-0.7	-0.2
Up-scale Drift, %	±3	0.1	-0.4	-0.4
Response Time, sec	N/A			

Table 6-2. Pellet Cooler 1 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.4		
Mid, %	±5	0.8		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.3	0.2
Zero Bias (Post), %	±5	0.3		0.3
Up-scale Bias (Pre), %	±5	0.1	-0.1	-0.1
Up-scale Bias (Post), %	±5	-0.1		0.3
Zero Drift, %	±3	0.3	-0.1	0.1
Up-scale Drift, %	±3	-0.1	0.0	-0.1
Response Time, sec	N/A			

Table 6-3. Dryer 2 Quality Assurance Results, Total Hydrocarbons, Method 25A, High Range				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.3		
Mid, %	±5	-0.1		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	-0.1
Zero Bias (Post), %	±5	0.1	-0.1	-0.1
Up-scale Bias (Pre), %	±5	0.0	-0.3	-0.4
Up-scale Bias (Post), %	±5	-0.3	-0.4	-0.3
Zero Drift, %	±3	0.1	-0.1	0.0
Up-scale Drift, %	±3	-0.3	-0.1	0.1
Response Time, sec	N/A	28		

Table 6-4. Dryer 2 Quality Assurance Results, Total Hydrocarbons, Method 25A, Low Range				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±8	1.0		
Low, %	±8	1.5		
Mid, %	±8	0.7		
High, %	±8	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.6	-0.6
Zero Bias (Post), %	±5	0.6	-0.6	-0.7
Up-scale Bias (Pre), %	±5	0.0	0.3	0.1
Up-scale Bias (Post), %	±5	0.3	0.1	-0.1
Zero Drift, %	±3	0.6	-1.2	-0.1
Up-scale Drift, %	±3	0.3	-0.2	-0.2
Response Time, sec	N/A	28		

Table 6-5. Dry Hammermill 2 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.2	0.0	0.2
Zero Bias (Post), %	±5	0.0	0.2	0.2
Up-scale Bias (Pre), %	±5	-1.3	-1.1	-1.3
Up-scale Bias (Post), %	±5	-1.1	-1.3	-1.2
Zero Drift, %	±3	-0.1	0.1	0.0
Up-scale Drift, %	±3	0.2	-0.1	0.0
Response Time, sec	N/A	28		

Table 6-6 Pellet Cooler 2 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.3	0.1
Zero Bias (Post), %	±5	0.3	0.1	0.2
Up-scale Bias (Pre), %	±5	-1.0	-0.9	-1.0
Up-scale Bias (Post), %	±5	-0.9	-1.0	-1.3
Zero Drift, %	±3	0.3	-0.2	0.0
Up-scale Drift, %	±3	0.1	-0.1	-0.3
Response Time, sec	N/A	28		

Table 6-7. Aspiration Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.7		
Mid, %	±5	0.0		
High, %	±5	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.0
Zero Bias (Post), %	±5	0.1	0.0	0.1
Up-scale Bias (Pre), %	±5	0.0	-0.1	-0.1
Up-scale Bias (Post), %	±5	-0.1	-0.1	-0.3
Zero Drift, %	±3	0.1	-0.1	0.1
Up-scale Drift, %	±3	-0.1	0.1	-0.3
Response Time, sec	N/A	28		

Table 6-8. Green Hammermill Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	1.1		
Mid, %	±5	1.6		
High, %	±5	0.4		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.1
Zero Bias (Post), %	±5	0.1	0.1	0.1
Up-scale Bias (Pre), %	±5	0.0	-0.1	-0.7
Up-scale Bias (Post), %	±5	-0.1	-0.7	-1.0
Zero Drift, %	±3	0.1	-0.1	0.1
Up-scale Drift, %	±3	-0.1	-0.5	-0.3
Response Time, sec	N/A	28		

6.4 Method 320 Quality Assurance

Air Control Techniques, P.C. performed daily quality assurance checks. Background scans and calibration transfer standard (CTS) spectra tests were performed prior to and following each test series. An analyte spike was performed using methanol.

The flow rate at the outlet of the pump was measured while the probe was plugged to verify that the sampling system was leaks. The flow rate was less than 200 ml/min.

The FTIR cell was tested for leaks by closing the value while the cell was at minimum absolute pressure.

Background Spectra

Sample spectra were divided point-by-point by a 128-scan background recorded using N_2. The single beam spectrum was constantly monitored, and a new background was generated approximately following each test series or when residual and absorbance spectra indicated component build-up on the optical surfaces or alignment-related baseline shifts.

Calibration Transfer Standards and Absorption Path Lengths

A cylinder of 100 ppm ethylene in nitrogen served as the CTS. A CTS gas was introduced to the FTIR and allowed to reach steady state. The CTS was used to determine effective cell path length based on comparisons of the "field" CTS spectra to a laboratory CTS spectrum recorded by MIDAC. As shown in Table 6-9, the maximum path length deviation was less than 5% of the average.

Table 6-9. CTS Results Summary

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Press. (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
10-Oct	806	8.78	0.137	14.7	121	NA	-0.6%
	1927	8.68	0.120	14.89	121	1.1%	0.5%
11-Oct	1121	8.73	0.134	14.8	121	-0.6%	-0.1%
	1301	8.73	0.133	14.7	121	0.0%	-0.1%
	1755	8.75	0.133	14.6	121	-0.3%	-0.3%
	2204	8.72	0.133	14.8	121	0.4%	0.1%
12-Oct	0809	8.59	0.133	14.9	121	1.4%	1.5%
	1300	8.77	0.137	14.6	121	-2.1%	-0.5%
	1940	8.78	0.134	14.72	121	-0.1%	-0.6%
13-Oct	0810	8.71	0.134	14.82	121	0.7%	0.1%
	1435	8.73	0.135	14.85	121	-0.1%	0.0%
	Average	8.725	0.133				

Background Spectra

On-site test personnel performed matrix spiking using a certified calibration standard of methanol and SF_6. The methanol gas standard was introduced into the sampling system upstream of the particulate matter filter at an average dilution ratio of less than 10% of the total sample volume. Analyte spiking was performed to demonstrate the suitability of the sampling system. The dilution factor was calculated based on the ratio of the SF_6 tracer gas analyzed directly by the FTIR and the in-stack measured concentration.

$$\frac{SF_6 \text{ during spike}}{SF_6 \text{ direct}} = DF$$

The recovery was calculated using the mean concentration of the spiked analyte (S_m), the native concentration of the analyte in the stack (S_u), the dilution factor (DF), and the cylinder concentration (C_s).

$$\text{Recovery}(\%) = \frac{\text{Sm} - \text{Su}\ (1 - \text{DF})}{\text{DFxCs}}$$

As shown in Table 6-10, the percent recovery was 100±30% as required by Method 320.

Table 6-10. Spike Recovery Results Summary

Direct Cylinder Spike, ppm		System Spiked Gas, ppm		Native Concentration, ppm		Recovery, %
methanol	SF_6	methanol	SF_6	methanol	SF_6	
101.26	2.84	9.867	0.272	0.496	-0.00789	94.6

Minimum Detectable Concentration

EPA Method 320 and the equivalent ASTM Standard D6348-03 specify a number of analytical uncertainty parameters that the analyst may calculate to characterize the FTIR system performance.

QA Review

Before the test program began, an analysis of possible analytical interferents (e.g., H_2O, CO_2, CO, pinenes) based on previous stack test data. Analytical wavelengths were determined to minimize analytical uncertainty and detection limits using reference spectra and the FTIR instrument that was used for the field testing.

At the conclusion of the testing a quality assurance review of the test data was performed. This review included examination of the sample spectra and the quantitative analytical results. It also included spot-checking the analysis results by hand. These examinations included visual comparisons of the sample and reference spectra.

7. PROCESS DOCUMENTATION

Enviva Pellets Wiggins, LLC personnel logged the following process data during each test run of each process unit.

- Throughput in tons per hour (all process units)
- Inlet temperature (dryer)
- Outlet temperature (dryer)
- Cyclone static pressure drop (dryer, hammermill, presses)
- Wood feed % softwood content

8. REFERENCES

1. Enviva, LP. "Emission Testing Protocol." Submitted to Mississippi Department of Environmental Quality, July 31, 2013.

2. Environmental Monitoring Laboratories, Inc. "Investigative Air Emissions Tests, Enviva Pellets Wiggins, LLC.", November 15-16, 2012" Report to Enviva, LP, January 13, 2013.

3. Air Compliance Testing, Inc. "Self-Evaluation Engineering Study Test Report, Determination of Hydroen Chloride Removal Efficiency and Total Gaseous Organic Emissions." Report to Georgia Biomass, LLC, August 27, 2012.

4. Richards, J., D. Goshaw, and T. Holder. "Laboratory Evaluation of VOC Emissions from Wood Pellet Processes." Report to Enviva, LP. July 31, 2013.

5. Beauchemin, P. and M. Tampier. "Emissions and Air Pollution Control for the Biomass Pellet Manufacturing Industry." Report submitted to the British Columbia Ministry of the Environment. May 12, 2010.

6. Milota, M.R. "Emissions from Wood Drying" Forest Projects Journal, Volume 50, Number 6, Pages 10-19, June 2000.

7. Milota, M. and P. Mosher. "Emissions of Hazardous Air Pollutants from Lumber Drying." Forest Products Journal, Volume 58, No. 7/8, Pages 50-55, July/August 2008.

Attachment B, Part Three:
Enviva Sampson Test

DIVISION OF AIR QUALITY
November 2, 2017

MEMORANDUM

To: Greg Reeves, Acting Supervisor, Fayetteville Regional Office

From: Shannon Vogel, Stationary Source Compliance Branch SVogel

Subject: Enviva Pellets Sampson, LLC
Faison, Sampson County, North Carolina
Facility ID 8200152, Permit No. 10386R03
Emissions Testing Performed March 2017 by Air Control Techniques P.C. (ACT)
ES-DRYER, ES-GHM-2, and ES-CLR-5
Tracking No. 2017-058st (report date **June 21, 2017**)

ACT performed emissions testing March and April 2017and submitted the results in a report dated May 30, 2017. The May 2017 report is reviewed under Tracking No. 2017-216st. Upon receipt of the May 2017 report, the Fayetteville Regional Office requested the results of additional testing performed at the ES-DRYER, Green Hammermill ES-GHM-2, and Pellet Cooler ES-CLR-5. The test results were submitted in a report dated June 21, 2017 and reviewed under Tracking No. 2017-058st. This memorandum addresses Tracking No. 2017-058st June 21, 2017 test report.

Air Control Techniques (and TRC Environmental Corporation) performed EPA Method 5/202 for filterable and condensible PM, EPA Method 7E for nitrogen oxides (NOx), EPA Method 10 for carbon monoxide (CO), EPA Method 25A for volatile organic compounds (VOC) and EPA Method 320 for hazardous air pollutants (HAP) methanol, formaldehyde, acetaldehyde, and propionaldehyde. EPA Other Test Method OTM-26 VOC *Interim VOC Measurement Protocol for the Wood Products Industry* calculations were used to determine VOC emissions from the subject sources.

The sources tested are **ES-DRYER,** wood-fired direct heat drying system controlled by four parallel simple cyclones CD-DC1, CD-DC2, CD-DC3, CD-DC4 in series with wet electrostatic precipitator CD-WESP, **Pellet Cooler ES-CLR-5** (1 of 6 pellet coolers) controlled by simple cyclone CD-CLR-5, and **Green Wood Hammermill ES-GHM-2** (1 of 8 hammermills) controlled by simple cyclone CD-HM-CYC-2 in series with bagfilter CD-HM-BF2.

The following regulations and emissions limits apply to the dryer, hammermills and pellet coolers:

15 NCAC 2D .0515 Particulates From Miscellaneous Industrial Processes which limits total particulate matter (PM) based on actual process rate,

15A NCAC 2D .1112 *112(g) Case-by Case Maximum Achievable Control Technology* (MACT) for which the permit states "the Permittee shall establish emission factors by conducting an initial performance test on the dryer system for formaldehyde, methanol, acetaldehyde, and propionaldehyde … The sum of the above HAPs will be multiplied by a correction factor of 1.04 to determine total HAPs for the dryer system," and

15A NCAC 2D .0530 *Prevention of Significant Deterioration* (PSD) applies. The permit specifies Best Available Control Technology (BACT) limits for filterable PM PM10/PM2.5, NOx, CO, and VOC. The BACT limits for the dryer system are NOx (0.20 pounds per million Btu [lb/mmBtu]), filterable PM (0.105 pounds per oven dry ton of pulp [lb/ODT]), CO (0.21 lb/mmBtu), VOC (1.07 lb/ODT). The

BACT limits for VOC from the green wood hammermills is 0.27 lb/ODT. The BACT limit for VOC from the pellet coolers is 0.85 lb/ODT. All BACT limits are 3-hour average.

The June 21, 2017 report of testing performed at the ES-DRYER on March 13, March 15-16, March 23-24 and March 29, 2017 (Tracking No. 2017-058st) has been reviewed and the results are discussed below.

13 March 2017 Testing of ES-DRYER

A single run of "engineering-oriented VOC, CO, NOx, O_2, CO_2, and organic HAP" preliminary testing was performed on March 13, 2017. ACT stated "No calibration data were obtained during this period." The 13 March 2017 test results are not acceptable.

15-16 March 2017 Testing at ES-DRYER

ACT performed EPA Method 5/202, 7E, 10, 25A and 320 emissions testing on March 15 and 16, 2017. The EPA Method 5/202 sampling was "terminated in the early part of the third run" due to "a fire [that] had ignited in the quench duct leading to the wet electrostatic precipitator." ACT states the "March 15-16 tests were not analyzed due to the highly nonrepresentative conditions during all the test runs" and states the "VOC, HAPs, and oxygen concentration data were also significantly affected by the fire." No test results are presented in this memorandum. The 2-run average results for CO and VOC (OTM-26 as α-pinene) from the abbreviated testing did not meet the permitted BACT limits.

23-24 March 2017 PM Testing of ES-DRYER

"Following the quench duct fire," ACT subcontracted TRC Environmental to perform EPA Method 5/202 for total (filterable and condensible) PM on March 23 and 24, 2017. The results were presented in Appendix B of the June 21, 2017 report. ACT questions the applicability of EPA Method 202 "due to the presence of highly soluble methanol and formaldehyde" which may "result in a significant bias to higher-than-true condensable particulate matter emissions." ACT reported that the EPA Method 202 samples were analyzed and "confirmed the retention of methanol and formaldehyde in the Method 202 impinger solutions." The results are tabulated below. No additional results were reported for March 23-24, 2017.

Table 1 - Total PM Results 23-24 March 2017

Pollutant	Results	Limit	Regulation	Compliance
Filterable PM	2.26 lb/hr	---	---	---
	0.031 lb/ODT[1,2]	0.105 lb/ODT	2D .0530 BACT	Yes
Condensible PM	9.25 lb/hr	---	---	---
	0.129 lb/ ODT[1,2]	---	---	---
Total PM	11.53 lb/hr	48.0 lb/hr[3,4]	2D .0515	Yes
	0.160 lb/ ODT[1,2]	---	---	---

1. "Reported lb/ODT based on an assumed dryer operating rate of 72 ODT/hour."
2. Josh Harris, FRO recorded a 65.4 ODT/hr dryer throughput rate for Run 3 on 3/23/17. No dryer throughput rate was reported for Runs 1 and 2. The lb/ODT reported results are biased low due to the assumed process rate.
3. 2D .0515 limit calculated based on assumed dryer rate of 72 ODT/hr.
4. The 2D .0515 limit would be 47.1 lb/hr at the Run 3 throughput rate of 65.4 ODT/hr.

29 March 2017 VOC and HAP Testing of ES-DRYER

ACT performed EPA Method 25A and 320 for VOC and HAP emissions, respectively. EPA Methods 7E and 10 were also performed for NOx and CO, respectively. The results reported in Appendix C of the June 21, 2017 test report are presented in Table 3 below.

The permit specifies that the BACT limits for VOC are "expressed as alpha pinene basis per the procedures in EPA OTM 26." Therefore, SSCB calculated the VOC in accordance with OTM-26 using EPA Method 25A VOC results as α-pinene and EPA Method 320 methanol and formaldehyde results. An error in the ACT calculations was discovered, therefore the VOC OTM-26 results tabulated below are as calculated by SSCB. All other test results are presented as reported by ACT in Table 2. The oven dry tons per hour (ODT/hr) process rates as reported by ACT are included in the table. The **CO** and **VOC** results **exceed the BACT limits**. The HAP emissions are methanol, formaldehyde, acetaldehyde, propionaldehyde, and total HAP.

Table 2 VOC (OTM-26), HAP, CO and NOx Results 29 March 2017

Pollutant	Results	Limit	Regulation	Compliance
VOC (M25A) as C_3H_8	83.75 lb/hr	---	---	---
VOC OTM-26 as $C_{10}H_{16}$	83.845 lb/hr	---	---	---
4 Run average Runs 1-3 average Runs 2-4 average	**1.174 lb/ODT** **1.182 lb/ODT** **1.205 lb/ODT**	**1.07 lb/ODT**	**2D .0530 PSD BACT**	**No**
Methanol	3.05 lb/hr	---	---	---
	0.0428 lb/ODT			
Formaldehyde	5.43 lb/hr	---	---	---
	0.0760 lb/ODT			
Acetaldehyde	4.56 lb/hr	---	---	---
	0.0640 lb/ODT			
Propionaldehyde	2.28 lb/hr	---	---	---
	0.0319 lb/ODT			
Total HAP	15.32 lb/hr	---	---	---
	0.215 lb/ODT			
Total HAP-Dryer System (1.04 Factor Applied)	0.224 lb/ODT	---	---	---
NOx	7.57 lb/hr	---	---	---
	0.054 lb/mmBtu	0.20 lb/mmBtu	2D .0530 PSD BACT	Yes
CO	31.54 lb/hr	---	---	---
	0.226 lb/mmBtu	**0.21 lb/mmBtu**	**2D .0530 PSD BACT**	**No**
Process Rate	71.5 ODT/hr	---	---	---
	139.8 mmBtu/hr	---	---	---

Table 3: Average of ACT *reported OTM-26 VOC results*

Pollutant	Results	Limit	Standard	Compliance
VOC (M25A) as C_3H_8	*83.7 lb/hr*	---	---	---
VOC OTM-26 as $C_{10}H_{16}$	*83.23 lb/hr*	---	---	---
(THC+MeOH+Form)	***1.165 lb/ODT***	**1.07 lb/ODT**	**2D .0530 PSD BACT**	**No**

ACT reported "In reviewing the process operating conditions during March 29th, Enviva concluded that the furnace overfire air velocities were not sufficiently high enough to achieve complete combustion. The low overfire air velocities allowed embers from the fuel bed to exit the furnace and enter the dryer system and cause excess emissions. Enviva Sampson decided it was necessary to plug 128 overfire air nozzles to increase the overfire air velocities and improve mixing in the furnace. The overfire air nozzles were plugged April 11."

The March 29, 2017 test results demonstrate exceedances of the 2D .0530 BACT emissions limits for VOC and CO. If you have any questions regarding the results of this review, please contact me at 919-707-8416 or shannon.vogel@ncdenr.gov.

cc: Central Files, Sampson County IBEAM Documents – 8200152

Attachment C:

Letter From Enviva to North Carolina DEQ re: Stack Tests

Attachment D

RAMBOLL

ENVIRONMENT
& HEALTH

Mr. Kevin Godwin
Permit Engineer
North Carolina Department of Environmental Quality
Division of Air Quality, Permitting Section
1641 Mail Service Center
Raleigh, NC 27699-1641

Via Electronic and First-Class Mail

Re: Response to Additional Information Request for Minor Source Permit Modification, Softwood Expansion Project, Enviva Pellets Hamlet, LLC, Hamlet, North Carolina
Richmond County
Permit No.: 10365R02
Facility ID: 7700096

Date July 18, 2018

Ramboll
8235 YMCA Plaza Drive
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Dear Mr. Godwin:

Per your July 6, 2018 letter, North Carolina Division of Air Quality (NC DAQ) has requested additional information on a permit application package submitted by Ramboll US Corporation (Ramboll) for a minor source permit modification for the Softwood Expansion Project at Enviva Pellets Hamlet, LLC (Enviva) (NC DEQ Facility ID #7700096) in Richmond County. DAQ's questions are listed below followed by our response.

1. **In Appendix C – Potential Emissions Calculations, footnotes to several tables state "Emissions factors are based on stack testing from comparable Enviva facilities". The DAQ requests that any test results specify which facilities and under what conditions they were operating under at the time of the test.**

   As requested, Attachment A includes a table summarizes the specific stack test data relied upon for each source including key operating conditions.

2. **Given the new emissions information, please re-evaluate the original MACT 112(g) analysis including an analysis of the requirement for installation of a regenerative thermal oxidizer (RTO).**

   As outlined in 40 CFR 63.43(d), the general principles for conducting a Case-By-Case MACT analysis under 112(g) are summarized below:

1) The MACT emission limitation or requirements shall not be less stringent than the emission control which is used in practice by the best controlled similar source.

2) The MACT emission limitation and control technology shall achieve the maximum degree of reduction in emissions of HAP which can be achieved by utilizing those control technologies that can be identified from available information, taking into consideration the costs of achieving such emission reduction and any non-air quality health and environmental impacts and energy requirements associated with the emission reduction.

3) If it is not feasible to have an enforceable emission limit, MACT can instead be chosen as a specific design, equipment, work practice, operational standard, or combination thereof.

4) If EPA has proposed a MACT emission standard or adopted a presumptive MACT determination for the source category, then the MACT analysis must consider this proposed standard or presumptive MACT.

As summarized above, the Case-By-Case MACT requirements do not directly take into consideration the individual point source HAP emission rate but rather a process of identifying specific control technology or emission limits used by the best controlled similar source or other source categories. Thus, a change in the Dryer emission rate based on recent source test results would not invalidate the previous Case-by-Case MACT analysis. Furthermore, a large percentage of the increased HAP emissions proposed in the pending application result from the proposed increase in production rate and not from updated HAP emissions test data. Also, as documented in both the initial PSD application and the pending minor source permit applications, a large percentage of VOC emissions from emission sources at the Hamlet plant are non-HAP pollutants. As such, the BACT cost effectiveness analyses performed in the initial PSD permit application provides a very conservative cost basis for the relative costs to install additional controls to reduce HAP emissions. These BACT cost analyses would therefore conservatively fulfill the MACT Tier II review procedures as provided in EPA's guidelines for MACT determinations as found in EPA document 453/R-02-001 dated February 2002. As documented in the BACT analyses, the economic cost effectiveness for additional controls are considered unreasonable and thus are excluded from a case-by-case MACT determination.

Enviva addressed the MACT 112(g) applicability in Section 5.2.2 of the pending minor source permit application and concluded that the current and proposed controls were consistent with the original Case-by-Case MACT analysis. As indicated in the initial PSD permit application for Hamlet, Enviva had originally anticipated that the drying and high-moisture pelletization process would reduce uncontrolled emissions to levels significantly below that of similar sources using RTOs. However, recent source test results for the Dryer indicate the VOC and corresponding organic HAP emissions are higher than previously estimated. Therefore, as part of the pending minor source permit application, Enviva also proposed to install an RTO to follow the WESP for the Dryer exhaust which will result in better control of VOCs and organic HAP emissions. In addition, Enviva will recirculate the emissions from the Green Wood Hammermills (ES-GHM-1 to 3) to either the inlet of the Dryer furnace or directly to the WESP/RTO system (CD-WESP/CD-RTO-1), which will provide control for organic HAP emissions from the green hammermill process. Furthermore, Enviva is proposing to install an RCO (with RTO backup) to control VOC and organic HAP emissions from the twelve (12) Pellet Mills and six (6) Pellet Coolers (ES-CLR-1 through 6.) With the installation of the RTO and RCO, Enviva will surpass the level of control required under the original case-by-case MACT

determination for the Hamlet plant, and Enviva does not believe that numeric HAP emission limits, nor a re-evaluation of the original Case-by-Case MACT analysis, are required.

Thank you for your prompt attention to this matter. If you have any questions regarding these responses or additional questions pertaining to the permit application, please contact me at (225) 408-2691 or Kai Simonsen, Air Permit Engineer at Enviva, at (984) 789-3628.

Yours sincerely,

Michael H. Carbon
Managing Principal

D 2254082691
M 2259073822
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ATTACHMENT A
SOURCE TEST DETAIL SUMMARY

Table A-1. Enviva Emission Factor Assessment Source Test Details					
Emission Source Type Tested	**Facility Tested**	**Test Date(s)**	**Pollutants Tested**	**Operating Production Rate (ODT/hr)**	**Softwood %**
Dryer	Cottondale	--	VOC	44.53	100%
	Georgia Biomass	--	VOC	55.66	100%
	German Pellets	--	VOC	38.5	100%
	Colombo	10/3/2017	VOC	64.27	80%
	Sampson	4/18/17 to 4/19/17	VOC	65.4	52%
	Northampton	Oct. 2013	Acetaldehyde Formaldehyde Propionaldehyde	59.76	10%
	Northampton	Sept. 2013	Acetaldehyde Formaldehyde Methanol Propionaldehyde	64.5	10%
	Southampton	12/3/2013	Acrolein Formaldehyde Methanol Phenol Propionaldehyde	62	10%
	Southampton	12/1/2015	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde	64.3	10%
	Sampson	April 2017	Acetaldehyde Formaldehyde Methanol Propionaldehyde	65.4	52%
Green Hammermill	Sampson	3/14/2017	VOC	40.37	52%
	Wiggins	Oct. 2013	Acetaldehyde Acrolein Formaldehyde Methanol Propionaldehyde	19.03	60%

Table A-1. Enviva Emission Factor Assessment Source Test Details					
Emission Source Type Tested	**Facility Tested**	**Test Date(s)**	**Pollutants Tested**	**Operating Production Rate (ODT/hr)**	**Softwood %**
	Wiggins	Aug. 2013	Formaldehyde Methanol Phenol	35	60%
	Amory	Oct. 2013	Formaldehyde Methanol	5.15	60%
Dry Hammermill	Cottondale	4/23/2013	VOC	121	95%
	Wiggins	Oct. 2013	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde	10.0	60%
	Wiggins	Aug. 2013	Formaldehyde Methanol Phenol	DHM1: 8.25 DHM2: 12	60%
	Northampton	Sept. 2013	Acetaldehyde Acrolein Formaldehyde Methanol Propionaldehyde	64.5	10%
	Amory	Oct. 2013	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde	14.8	60%
	Amory	Aug. 2013	Formaldehyde Methanol Phenol	15.15	60%
Pellet Cooler	Cottondale	1/28/10 to 1/29/10	VOC	66.36	95%
	Cottondale P1-2	8/31/2016	VOC	32.6	95%
	Ahoskie	6/25/2014	VOC	22.4	45%
	Northampton	9/24/2013	VOC	64.5	10%

Table A-1. Enviva Emission Factor Assessment Source Test Details					
Emission Source Type Tested	**Facility Tested**	**Test Date(s)**	**Pollutants Tested**	**Operating Production Rate (ODT/hr)**	**Softwood %**
	Sampson PC 5	3/27/2017	VOC	11.54	52%
	Wiggins PC1	Oct. 2013	Acetaldehyde Acrolein Formaldehyde Phenol Propionaldehyde	3.68	60%
	Wiggins PC2	Oct. 2013	Acetaldehyde Formaldehyde	13.9	60%
	Cottondale PC1-2	Sept. 2015	Acetaldehyde Formaldehyde Methanol	31.05	95%
	Cottondale PC2-2	Sept. 2015	Acetaldehyde Formaldehyde	31.04	95%
	Cottondale PC3-2	Sept. 2015	Acetaldehyde Formaldehyde	37.68	95%

Attachment E

DEC 1 2 2014

Georgia Department of Natural Resources

Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Jeff Babb
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Hazlehurst Wood Pellets, LLC
COMPANY LOCATION	Hazlehurst, GA
SOURCE TESTED	Pellet Cooler Baghouse S1B Exhaust
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Jeff Babb
TEST WITNESSED BY	Jeff Babb
DATE(S) OF TEST	August 28, 2014
DATE RECEIVED BY APB	October 27, 2014
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	21 ODT/HR
ALLOWABLE EMISSION RATE	249 Tons/Year
APPLICABLE REGULATION	Air Quality Permit No. 2499-161-0023-E-01-0, Condition 2.1
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (PPM Carbon)	145.9	142.8	153.9	147.5
EMISSION RATE (LB/HR Carbon)	6.62	6.07	6.55	6.41

PERCENT ALLOWABLE (%): 19.2

OTHER INFORMATION:

ISMP calculated M25A emission rate = 7.8 LB/HR as Propane

Ref. No. 201401158 results for M25A VOC Propane = 3.0 LB/HR
Ref. No. 201401159 results for Formaldehyde = 0.01 LB/HR
Ref. No. 201401160 results for Methanol = 0.01 LB/HR
Ref. No. 201401161 results for Acetaldehyde = 0.02 LB/HR
Ref. No. 201401159 results for M25A VOC S1B = 7.8 LB/HR
Ref. No. 201401165 results for Formaldehyde = 0.01 LB/HR
Ref. No. 201401166 results for Methanol = 0.09 LB/HR
Ref. No. 201401167 results for Acetaldehyde = 0.06 LB/HR

At a production rate of 21.0 ODT/HR the OTR26 (NCASI WPP1) Total VOC emission rate = 10.9 LB/HR
On an ODT basis is 0.52 LB VOC/ODT.
Therefore the OTM 26 (WPP1) potential total annual VOC emission rate is 47.7 LB/Year or 19.2% of the allowable VOC emission rate of 249 TON/Year.

TEST REPORT TRANSMISSION SUMMARY
(Submit separate summary sheet for each pollutant test report)

Submit to:
Ross Winne, Program Manager
Industrial Source Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

ISMP Database
(Air Protection Branch use only)
No.

Facility Name: **Hazlehurst Wood Pellets, LLC**

Facility Address: **430 Hullett Wooten Farms Road** **Hazlehurst** **GA** **31539**

Facility Contact: **Chris Tanner** Phone No. **(912) 551-9251 ext. 109**

PART A

Emission Point (one only): **S2B Pellet Cooler Baghouse Exhaust**

Pollutant (one only): **Total VOC** Date test performed: **12-16-15**

Applicable Rule(s), Regulation(s) or Permit Conditions: **Permit 2499-161-0023-V-02-0**
Condition 2.1.1 (249 tpy) PSD avoidance

Maximum expected operating capacity: **20 ODT/hr, output, 12% moisture**

Operating capacity during test: **20 ODT/hr, output, 12% moisture**

Computed allowable emission rate(s) or limitation(s): **None**

Reported emissions to atmosphere: **12.4 lb/hr (as propane)**

The test report should include a compilation of all CEMS data, control devise parameters and process operating data related to the test. **No CEMS present. Control device parameters and process operating data are provided in Appendix D of test report.**

PART B

For any facility operating under a Part 70 Permit, Condition 8.8.3 of that permit requires the following certification should be signed by a responsible official and included with the report:

I certify that based on my information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

Chris Tanner		Corp. Environmental Mgr	2-10-16
NAME	**SIGNATURE**	**TITLE**	**DATE**

Rev. 05/30/06

Attachment F

FILE COPY

STATE OF MISSISSIPPI
PHIL BRYANT
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
GARY C. RIKARD, EXECUTIVE DIRECTOR

May 23, 2017

CERTIFIED MAIL: 7010 1670 0000 1401 4884

Mr. Joe Harrell, Corp. EHS Mgr.
Enviva Pellets Amory LLC
142 N C Route 561 East
Ahoskie, NC 27910

Re: Notice of Violation
Enviva Pellets Amory LLC
Amory, Mississippi
Monroe County
Air-Title V Operating Permit No. 1840-00082

Dear Mr. Harrell:

Our office has received multiple complaints over the past year pertaining to sawdust and smoke leaving the above referenced facility impacting neighboring properties and vehicles. It has also been stated that the dust and smoke is causing respiratory problems for some of the citizens in the area.

As a result of these complaints, our Regional Office inspectors have been on site to investigate, and I was in contact with Enviva personnel to discuss the means by which the facility decided would prevent or minimize the dust that leaves the site. The controls and operating procedures put in place as a result of our conversations are proving to be insufficient in preventing further contamination of the surrounding properties and problems for the citizens. An inspector was on site as recent as April 6, 2017 to investigate additional complaints received in March and April, 2017. While our inspector was on site, he spoke with Mr. Paul Pigg and Davis Lovelace, both personnel of Enviva about potential dust and smoke areas of concern. Since the April 6th investigation, we have continued to receive similar complaints. Based upon our findings during the investigations, we hereby cite the following alleged violations:

- Failure to prevent materials, particularly sawdust and smoke, in unnecessary amounts from leaving the site.

Agency Interest No. 24301
ENF20170001

No person shall cause, permit, or allow the emission of particles or any contaminants in sufficient amounts or of such duration from any process as to be injurious to humans, animals, plants, or property, or to be a public nuisance, or create a condition of air pollution.

(1) No person shall cause or permit the handling or transporting or storage of any material in a manner which allows or may allow unnecessary amounts of particulate matter to become airborne.

(2) When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amount as to cause a nuisance to property other than that from which it originated or to violate any other provision of this regulation, the Commission may order such corrected in a way that all air and gases or air and gasborne material leaving the building or equipment are controlled or removed prior to discharge to the open air. ***(Ref: Title V Operating Permit No. 1840-00082, Item 3.B.6 and 11 Miss. Admin. Code Pt. 2, R.1.3.C.(1 & 2))***

We request that you respond to these alleged violations no later than ***June 9, 2017***. We will review the information submitted before determining if further action is warranted. Failure to submit a response to this request may result in enforcement action.

If you have any questions concerning this matter, please contact me at (601) 961-5793.

Sincerely,

Trayce Moore-Thomas
Timber and Wood Products Branch
Environmental Compliance and Enforcement Division

Cc: Mr. John Burns, Enviva, Amory

+1 (240) 482 3825 (direct line)
cell (240) 459 0128
robert.mcculloch@envivabiomass.com

From: Matt Hannon [mailto:valveman@americancontrols.com]
Sent: Wednesday, April 05, 2017 4:37 PM
To: Robert McCulloch <Robert.McCulloch@envivabiomass.com>
Cc: tim_aultman@deq.state.ms.us; mayor@cityofamoryms.com; zackmc@cityofamoryms.com; john@creekmorelawoffice.com
Subject: RE: Enviva Amory MS Facility

Dear all,

This email intent is just to notify that the weather today has duplicated the conditions we continue to have issues with. I have contacted our regional DEQ rep per his request. I know the entire town is experiencing this as I have had many complaints of smoke and saw dust as we are preparing for the annual railroad festival. This email is just for documentation, I will continue to send these as record of the problems as they occur. Our shop is filled with smoke and lose flying saw dust that continues to cause health and safety risk for my workers as well as in the open air around the area.

Best Regards,

Matt Hannon - VP
A.C.T., Inc.
311 Front Street North
Amory, MS 38821
Phone: 662-257-9952 Ext. 501
Fax: 662-256-4118
Email: valveman@americancontrols.com
James 1:12 (NIV)

From: Matt Hannon [mailto:valveman@americancontrols.com]
Sent: Thursday, March 23, 2017 3:10 PM
To: 'robert.mcculloch@envivabiomass.com'
Cc: 'tim_aultman@deq.state.ms.us'; 'mayor@cityofamoryms.com'; 'zackmc@cityofamoryms.com'; 'john@creekmorelawoffice.com'
Subject: Enviva Amory MS Facility

Good day Mr. McCulloch,

Thank you for your time on the phone Tuesday regarding our ongoing issues here with the Amory Enviva facility impacting our business and health. I have a link below to a Dropbox folder that contains stills and video of the issues we have experienced for many years. Some of the photos are from Google Earth and reference the date taken from satellite imagery and you can see the condition of our roof deteriorate as the plant increased its production over time to the point of having to replace our entire roof in 2015 as it expedited the rusting process with the saw dust and smoke that is air borne combined with rain water to form acid rain. Also notice the buildings surround had the same effect from year 2012 -2013. The brunt of the major affect is driven by the weather behavior and seems to coincide with days the facility is not functioning as to spec by MDEQ and operating efficiently. We just want a fair approach to this matter especially on days where the weather is pushing this material into our facility and affecting the health and safety of my

workers. Please feel free to contact myself, the Amory Mayor Mr. Brad Blalock @ 662-256-5635, the Amory City Attorney Mr. John Creekmore @ 662-256-8208 or Mr. Tim Aultman with Mississippi Department of Environmental Quality @ 601-961-5653 as they are all aware from myself as well as MANY other individuals in the community who are ready to speak to you and voice their experiences and issues it has physically caused to their facilities and health of the ongoing and growing issue. If you need others in the community to hear from I can provide as many contacts as you would like or have them contact you directly. The photos and video do not do the issue justice as to the level of health danger on the days like we had on Tuesday when the plant manager came over and witnessed firsthand the direct affects and admitted the issue is real and needful of addressing. I am grateful for you working with us and look forward to your response and plan of action going forward.

https://www.dropbox.com/sh/k7n0manlsp19l8u/AACUt7v-PRrBDVVMx3z_239Za?dl=0

CC: Mr. Brad Blalock - Mayor
Mr. John Creekmore - Attorney
Mr. Tim Aultman - MDEQ
Mr. Zack McGonagil - Fire Chief

Best Regards,

Matt Hannon - VP
A.C.T., Inc.
311 Front Street North
Amory, MS 38821
Phone: 662-257-9952 Ext. 501
Fax: 662-256-4118
Email: valveman@americancontrols.com
James 1:12 (NIV)

Attachment G

Ministry of Environment

FACTSHEET
AIR EMISSIONS

July 2011

Wood Pellet Manufacturing Facilities

Under the *Environmental Management Act* (EMA), all high-risk, and some medium-risk, industrial operations in British Columbia are required to have government authorization[1] prior to discharging emissions or waste to the environment. These authorizations are legally enforceable and are subject to pollution preventing conditions and criteria. Authorizations for new, or significantly modified, wood pellet manufacturing facilities are developed based on the Ministry's Guideline for Emissions from Wood Pellet Manufacturing Facilities.

The purpose of this document is to summarize key emissions information contained in the Ministry's Guideline for Emissions from Wood Pellet Manufacturing Facilities.

What are guidelines used for?

Guidelines provide assistance to directors, appointed under EMA, when preparing and issuing authorizations for industrial facilities.

What are wood pellets?

Wood pellets are a type of wood fuel, usually produced as a by-product of sawmilling and other wood transformation activities. The pellets are generally made from compacted sawdust and shavings. The sawdust and shavings may be blended with smaller amounts of processed bark, hog fuel, processed standing dead timber and processed landing debris.

Wood pellets are usually 6 to 8mm in diameter and 2cm in length. However, they can be manufactured in other configurations, such as pucks or logs.

[1] Authorizations may include permits, approvals, operational certificates or regulations. For more information on waste discharge authorizations, see: http://www.env.gov.bc.ca/epd/waste_discharge_auth/index.htm

How are wood pellets produced?

Wood pellets are normally produced by compressing dry wood materials to a desired size. First, raw wood materials are passed through a hammer mill and dryer to achieve consistent moisture content. Then, the dry wood particles are fed to a press. In the press they are squeezed through a die having holes of the required size.

The high pressure causes the temperature of the wood to increase greatly, causing the lignin to plasticize slightly and form a natural 'glue' that holds the pellet together.

How are air emissions produced during the wood pellet manufacturing process?

Air emissions may be produced during the wood pellet manufacturing process from sources such as dryers, coolers, pelletizers, hammermills, and conveyors. Fugitive emissions are also released during the handling, storage and transportation of the materials.

What are the emission limits?

The Guideline for Emissions from Wood Pellet Manufacturing Facilities outlines emission limits for total particulate matter (TPM) and fugitive emissions.

The guideline is based on best achievable technology and describes requirements for both new and significantly modified existing facilities.

New Facilities

The guideline stipulates that all new facilities should install control technologies that will at minimum, achieve the emission limits listed in Tables 1 and 2.

Existing Facilities

The guideline specifies that existing facilities that have undergone significant modifications are expected to meet the applicable monitoring and control requirements listed in Tables 1 and 2. Existing wood pellet manufacturing facilities that have not been significantly modified may continue to operate in accordance with the limits of their current permit.

When has a facility been "significantly modified"?

A facility has been significantly modified if it has undergone a physical or operational change resulting in an increase of 10% or more in the volume of discharge or the total amount of any contaminant released to the environment, based on authorized values.

What is Total Particulate Matter (TPM)?

Particulate matter refers to tiny solid or liquid particles that float in the air. TPM consists of filterable and condensable particulate matter. Filterable particulate matter includes all PM_{10} and $PM_{2.5}$ emissions, where PM_{10} and $PM_{2.5}$ are comprised of particulate matter with aerodynamic diameters less than 10 and 2.5 micrometers respectively. Condensable particulate matter is any material that is not particulate matter at stack conditions, but condenses and/or reacts to form particulate matter immediately after discharge from the stack.

Why are TPM emissions limited?

TPM emissions are limited because they can have negative impacts on local air quality and human health. $PM_{2.5}$ is known to cause aggravation of respiratory and cardiovascular disease, reduced lung function, increased respiratory symptoms and premature death. TPM also impairs visibility, affects climate and can damage and/or discolour structures and property.[2]

TPM emission limits

The TPM emission limits and monitoring frequency for wood pellet manufacturing facilities outlined in the Ministry's guideline are summarized in Table 1.

In addition to emission limits listed below, facilities should strive to maintain opacity below 10%. Opacity can be thought of as the amount of light blocked by TPM.

How frequently should TPM emissions be monitored?

The monitoring frequency listed in Table 1 should be followed except in the case of the implementation of new process units. For new units, an operator should undertake baseline monitoring (stack testing) within six months of start up. Thereafter, the operator should continue monitoring at the prescribed monitoring frequency stated in Table 1.

What are fugitive emissions?

Fugitive emissions are unintentional or incidental releases. The significance of fugitive emissions at wood pellet manufacturing facilities may vary depending on the type of raw material, method of transportation and specific process used in the production of the wood pellets. Major sources of these emissions include raw material handling, raw material storage piles, conveyor transfer points, yard dust, haul road dust and engine exhaust.

Fugitive emission limits

Table 2 provides a summary of the limits and monitoring and control strategies detailed in the guideline to mitigate fugitive emissions.

What are the effluent handling requirements?

If the applied emission control technology uses a solution, such as water, any resulting effluent should be delivered to an approved facility for treatment or disposed of in a manner approved by a director.

[2] More information on how air quality affects human health can be found in the State of the Air Report 2010 at: http://www.bc.lung.ca/airquality/documents/StateOfTheAir2010webrevised.pdf

Are there other considerations?

The information contained in the Ministry's guideline documents are just one of the main pieces of information taken into consideration by the director when approving an authorization. Additional sources of information considered by the director may include environmental impact assessments, local air shed plans, other guidelines and stakeholder input. The director also has the authority to impose emission standards other than those that are recommended in these types of guidelines.

For more information, contact the Environmental Standards Branch at envprotdiv@victoria1.gov.bc.ca

Or, consult our website at http://www.env.gov.bc.ca/epd/industrial/pulp_paper_lumber/pdf/moe-pellet-industry-051410.pdf.

Table 1: Total Particulate Matter Emissions Limits for Wood Pellet Manufacturing Facilities.

Source	Limit[(a)] (mg/m^3)	Monitoring[(b)]
Dryer Exhaust	60[(c)]	Quarterly
Pellet Cooler Exhaust	115[(e)]	Annual
Other Plant Processes[(d)]	20[(e)]	Annual

(a) Concentration limits measured at standard conditions of 20°C, 101.3kPa, dry gas.
(b) All monitoring for this guideline must be carried out in accordance with the latest version of the: *British Columbia Field Sampling Manual – For Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples.*
(c) The dryer exhaust limit includes filterable and condensable particulate matter. It is an interim two year limit. This limit may be adjusted as more data becomes available.
(d) Other plant processes may include pelletizers, hammermills, storage, screening and conveyors.
(e) Includes filterable particulate matter only.

Table 2. Fugitive Emissions from Raw Material Storage Piles and Road Dust

Source	Limit	Monitoring and Control
Sawdust and Wet Material	No Visible downwind carry over	Visual monitoring with controls as required including: limiting pile heights and limiting exposed pile faces to high winds (e.g. wind breaks; vegetative or screens). Include meteorological controls and planning.
Planer Shavings and Dry Material		As above, plus three sided and covered containment. Prevent vehicle traffic from grinding material finer.
Onsite Haul Roads		Dust suppression in dry season or paving.

Attachment H

DANISH TECHNOLOGICAL INSTITUTE

Guideline: Storage and Handling of Wood Pellets

Resultat Kontrakt (RK) Report

Wolfgang Stelte

December 2012

Energy & Climate
Centre for Renewable Energy and Transport
Section for Biomass

DANISH TECHNOLOGICAL INSTITUTE

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DK-2630 Taastrup

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Contents

1 INTRODUCTION

The use of solid biofuels i.e. wood pellets and briquettes has increased significantly during the last 15 years. Biomass briquettes are mainly used by small scale consumer's i.e. private households while biomass pellets are used both within the private sector and for commercial heat and power production in large scale, industrial plants. During the past 10 years wood pellets have become an important energy carrier to substitute coal in the Danish energy sector. Today most pellets used in Denmark are produced abroad and shipped to Denmark in large container vessels where they are used as fuel in combined heat and power plants (CHP-plants), for district heating and small scale pellet boilers. The pellet consumption in Denmark is expected to increase strongly within the next 10 years and it is therefore necessary to provide a guideline for secure handling of solid biofuels. Recently different guidelines have been published by the Association of German Engineers [1], German pellets institute [2] or the Nordic Innovation Centre [3] dealing with safe handling and storage of solid biofuels. Safety considerations of biomass handling have been picked up in several journal articles and books dealing with solid biofuels [4-11].
A number of serious incidents have been reported across Europe in connection with false handling of wood pellets. Some of them have resulted in injury or even death of the handling personnel and some resulted in great damage and financial loss for the companies handling the pellets. Table 1 provides examples of accidents in relation with handling and storage of solid biofuels during the last 10 years. Most people consider wood materials as harmless, natural products and underestimate the risk potential, especially when storing it in closed compartments i.e. silo, storage room or transport vessels.

Table 1: Examples of accidents related to the storage and transportation of solid biofuels [4]

Year	Place	Accident
2002	Rotterdam	A ship loader on board of the "Weaver Arrow" loaded with wood pellets went down in the storage compartment and suffocated
2005	Gruvön	A seaman suffocated on board of the wood freighter "Eken" when he went down the stairs to the cargo room that was filled with pulpwood.
2006	Helsingborg	A seaman on board of the "Saga Spray" suffocated when he went down the stairs to the storage compartment filled with wood pellets. A ship loader and a rescue team rushing for assistance got severely injured
2006	Skelleftehamn	A seaman on board of the "Noren" died when he entered a storage compartment filled with wood chips
2007	Timrå	The captain and one seamen of the wood freighter "Fembria" died when they walked in the storage compartment filled with timber wood.
2007	Finland	A person died when walking into a small (10 t) wood pellets silo.
2008	Finland	Another person died when walking into a small (10 t) wood pellets silo.
2009	Bornholm	Two seaman on board of the "Amirante" died when they entered the cargo room filled with wood pellets. The pellets were loaded one day before.
2010	Germany	A person suffocated in a pellet storage (150 t)
2010	Ireland	A person suffocated in a pellet storage (7 t)
2011	Switzerland	A person suffocated in a pellet storage (100 t)

2 SCOPE

The intention of this guideline is to provide recommendations for the handling of solid biofuels in a responsible and safe way, minimizing risks for health and safety. The guideline is addressing both large and small scale producers, transporters and end users of solid biofuels. Focus is set on wood pellets and wood chips since they are by far the most common type of solid biofuels in Denmark.

3 TERMINOLOGY AND DEFINITIONS

Terms and terminology of this guideline apply as given in EN 14588. Specifications of different types of solid biofuels are defined according to EN 14961-1

4 SOLID BIOFUELS

Solid biofuels cover a wide range of sizes and shapes from wood pellets to straw bales. Solid biofuels and their typical dimensions and preparation method are specified in the European standard EN 14961 as shown in Table 2.

Table 2. Major trade form of solid biofuels according to EN 14961-1 [1]

Name	Typical particle size	Preparation
Whole tree	> 500 mm	No preparation or delimbing
Wood chips	5 to 100 mm	Cutting with sharp tools
Hog fuel	undefined	Crushing with blunt tools
Log wood/firewood	100 to 1000 mm	Cutting with sharp tools
Bark	undefined	Debarking residues from trees, can be crushed, shredded or unshredded
Bundle	undefined	Lengthwise oriented & bound
Fuel powder	< 1 mm	Milling
Sawdust	1 to 5 mm	Cutting with sharp tools
Shavings	1 to 30 mm	Planning with sharp tools
Briquettes	Diameter > 25 mm	Mechanical compression
Pellets	Diameter < 25 mm	Mechanical compression
Small square bales	0.1 m^3	Compressed and bound to cubes
Big square bales	3.7 m^3	Compressed and bound to cubes
Round bales	2.1 m^3	Compressed and bound to cylinders
Chopped straw or energy grass	10 to 200 mm	Chopped during harvesting or before combustion
Grain or seed	undefined	No preparation or drying except for process operations necessary for storage
Shells and fruit stones	5 to 15 mm	No preparation or pressing and extraction by chemicals
Fiber cake	undefined	Prepared from fibrous waste by dewatering

5 GENERAL RISK EVALUATION OF BIOMASS HANDLING AND STORAGE

Major problems that can arise when handling large amounts of biomass are connected to dust formation, off gassing, self-heating and biological hazards. The quality of biomass is subject of large variation and depending on biomass origin, size, shape, composition and moisture content different problems can occur during handling and storage. The most common problems are summarized in the following section:

5.1 Self-heating and self-ignition

Self-heating of biomass can occur either by chemical oxidation reactions and/or microbiological decay. The more fresh the biomass and the higher the moisture content the greater is the risk for self-heating and potential self-ignition. Self-heating of biomass is a serious problem and has been cause of several incidents.
Oxidation reactions require oxygen and the oxidation rate of the biomass seems to depend on the age of the biomass and generally decreases with storage time. The reactions go along with oxygen depletion which is a potential risk for pellet handling personal. The mechanism behind the oxidation reactions are not completely understood but it is likely connected to the biomass extractives. Heat development due to microbiological decay is to large extent depending on the moisture content and the surface area [5].

There are some general recommendations to avoid self-heating and self-ignition of biomass. According to Obernberger and Thek they can be summarized as follows [5]:

- Avoid storage and transport of large volumes if the fuel's tendency for self-heating is unknown
- Be conscious of the risk of self-heating and spontaneous ignition in large storage volumes
- Avoid mixing of different types of biomass fuels in one storage
- Avoid mixing of biomass fuels with different moisture content
- Avoid large parts of fines in the fuel bulk
- Measure and monitor the distribution temperature and gas composition within the stored material
- Prepare (large) silos for gas injection at the bottom of the silo in case a fir should occur
- Pellet storage units must be equipped with size dependent, appropriate means of ventilation control to remove carbon monoxide and carbon dioxide

  In case a fire occurs it has to be noted that fire fighting procedures are difficult since water cannot be used in many cases, especially when pellets are stored in a silo. Pellets absorb moisture quickly and swell to about 3 to 4 times of their size, forming a cake like structure that can become very hard and is difficult to remove from the silo. The pellet expansion can in worst case result in a burst and collapse of the pellet silo. Self-heating occurs usually deep inside the bulk and the fire source is therefore difficult to reach.
  Gases such as nitrogen and carbon dioxide and foams are usually the methods of choice to extinguish fires in pellet silos. Fire fighting operations, especially in large silos can be very complex and expensive operations. The technical research institute of Sweden (SP Sveriges Tekniska Forskningsinstitut) has published methods for extinguishing fires in wood pellet silos [17,18].

5.2 Off-gas formation and oxygen depletion

Biomass releases CO and CO_2 and oxygen is consumed in chemical oxidation processes and microbiological processes. CO and CO_2 are odourless toxins and can be lethal at low concentrations. Low oxygen concentrations can lead to suffocation of the handling personal when entering closed biomass storage without proper ventilation. Several death cases have been reported in connection with wood pellet storages during the last years both in large silos and container vessels but also in relatively small pellet storage in private homes. A closed biomass storage i.e. pellet storage room should never be entered before it has been ventilated with fresh air. CO and CO_2 are heavier then air and will accumulate at higher

concentrations at the bottom of the storage. Furthermore does biomass contains various different volatile organic compounds (VOCs) i.e. terpenes and terpenoids, esters, ethers and aldehydes. A lot of these VOCs can evaporate from the wood and in some cases they might accumulate in concentrations that may cause a health and safety hazard.

5.3 Dust formation

Handling of biomass can liberate significant amounts of dust. Especially dry biomass particles have often a low density and a high drag coefficient and can easily be dispersed in the air. Airborne dust particles pose a great risk to anyone coming into contact with them, mainly through inhalation. Dust can have different impacts on health, but the main effects of biomass dust are on the lungs and the respiratory system. The inhalation of an excessive amount of dust particles can result in irritation of the lungs, nasal and respiratory system. It can give raise to allergic reactions and severe illness such as cancer when exposed repeatedly over a longer period of time. Apart from that dust can irritate the eyes, causing sourness and conjunctivitis. There are clear limitations for dust exposure of working personal on national and international level. For Denmark the Danish Working Environment Authority (Arbejdstilsynet) can be contacted for further information.

The second great risk connected to biomass dust is the risk for dust explosion. Dust has a very large surface area compared to its mass. Ignition of biomass can only occur at the interphase between biomass and air and this causes dust to be much more flammable then bulk material. Depending on biomass type, size and shape of the particles, explosive suspensions can be formed at different mass to oxygen ratios. Those explosive mixtures can be ignited by electrostatic discharges, friction or hot surfaces and can result in fatal damage. There are strict regulations in place to prevent dust explosion accidents. In some cases it might be necessary to classify biomass handling processes according to the ATEX directive. For Denmark the Danish Technological Institute (Teknologisk Institut) can be contacted for further information and help regarding risk evaluation and safety procedures. Table 3 shows an example of the ignition/explosion properties of dust from wood pellets (white dust), bark pellets, coal and a fungi and the used testing standard [5]. The pellet handbook from Obernberger and Thek [5] should be consulted for further reading.

Table 3. Ignition and explosion properties of dust from wood pellets (white dust), bark pellets, coal and a fungi. Data taken from Obernberger and Thek [5].

Test mode	Test parameter (dust < 63 μm)	Unit	White dust	Bark dust	Coal dust	Lycopodium spores	Testing standards
Dust cloud	Auto-ignition Temp (T_C) (Godbert-Greenwald)	°C	450	450	585	430	ASTM E1491
	Min Ignition Energy (MIE)	mJ	17	17	110	17	ASTM E2019
	Max Explosion Pressure (P_{max})	bar	8.1	8.4	7.3	7.4	ASTM E1226
	Min Explosion Pressure Rate (dP/dt_{max})	bar/s	537	595	426	511	ASTM E1226
	Deflagration Index (K_{St})	bar.m/s	146	162	124	139	ASTM E1226
	Min Explosible Concentration (MEC)	g/m³	70	70	65	30	ASTM E1515
	Limiting Oxygen Concentration (LOC)	%	10.5	10.5	12.5	14.0	ASTM E1515 mod
Dust layer	Hot Surface Ignition Temp (5 mm) (T_s)	°C	300	310			ASTM E2021
	Hot Surface Ignition Temp (19 mm) (T_s)	°C	[illegible]	260			ASTM E2021
	Auto-ignition Temp (T_L)	[illegible]	[illegible]	[illegible]			[illegible]
	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]		[illegible]	[illegible]			[illegible]

5.4 Biological hazards

Biomass is a natural product and as such a potential feedstock for different types of microorganisms i.e. fungi and bacteria. The risk of microbiological decay of the biomass depends on the biomass properties i.e. size and composition, moisture content and temperature. The major source of decay is caused by fungal infections. Fungi can digest the biomass and form large colonies commonly known as mould. Fungi produce toxins when growing on biomass i.e. mycotoxines and they can be released as dust into the air. Airborne fungal spores and toxins can cause irritations and allergic reactions along the respiratory system. Inhalation and direct contact should be avoided.

6 HANDLING OF WOOD PELLETS

Large amounts of wood pellets are transported by land and sea way, and the intercontinental trade of wood pellets is likely to increase by factor 10 within the next decade. It is therefore important to look on the overall risks involved in handling wood pellets. Mechanical forces during transportation of pellets cause fractures and breakage of the pellets, resulting in fines and dust. Although there are high quality standards (i.e. EN 14961-1) ensuring that pellet producers produce pellets with a high strength and abrasion resistance this problem cannot be eliminated completely. Especially pellets used in large scale applications such as heat and power plants are usually not following those standards. In those cases the quality standards are often agreed directly between the pellet producer and the large scale consumer. The mechanical durability of wood pellets is usually determined in a tumbler, simulating the impact forces that pellets experience during transportation. A standardized method exists to measure pellet durability, and this can be consulted for further reading (EN 15210-1).

To prevent the formation of fines and dust, handling should be as gentle as possible. The more handling steps the more degradation of the pellet. Important factors for handling are the drop height, elasticity of the impact surface and the number of times the pellets are dropped. Pellet degradation is a function of number of impacts and impact force (i.e. drop height) and they should be limited to a minimum to prevent dust and fines formation. There are many different ways of transporting pellets. The most common ways to move pellets from/to storage and transportation vessels are conveying and vacuum pumping. Especially large scale bulk handling of pellets exposes high mechanical load onto the pellets. This can be the case when loading pellets into an ocean vessel or into a large pellet silo at the producer/consumer site. Drop height are usually high (up to 25 m and more). It also has to be considered that pellets drop on each other and that a high weight load is exposed to the pellets lying in the bottom of the vessel/silo.

Pellet abrasion and dust formation takes place along the whole supply chain of the wood pellets from the pellet mill to the customer. Fines and dust formation during handling can occur during all of the steps during the supply chain. The most prominent ones are listed below:

- Conveying the pellets from the pellet plant to storage
- Packing of pellets i.e. big bags
- Conveying to transport vehicle
- Filling transport vehicle
- Discharge transport vehicle
- Conveying to another transport vehicle or to storage
- Filling into storage

Pellets are usually conveyed or transported by pneumatic pumps. The latter one might do severe damage to the pellets when the pressure (velocity of the pellets) is too high and if there are sharp turns in the transport pipe or potential impact sites for the pellets.

Pellet transport can take place either in trucks, trains or ships depending on the transport distance. Trucks are usually used to bridge short distances while trains are used for longer distance. Ship are used to transport large amounts of pellets either directly to the end customer or to a harbor were the pellets are unloaded and distributed to smaller transport vessels. A lot of large scale users are located close to the water so they can receive pellets by ship.

6.1 Loading and transport (in closed vessel)

Large volumes of pellets from oversea are transported in ocean vessels. Especially on the trans-Atlantic route from Northern America to Europe bulk carriers are used. The size varies and is usually ranging from 1.500 to 50.000 deadweight tons (dwt) [5]. During shipping the pellets are kept dry under hatch covers with tight seals. To avoid the penetration of moisture into the storage compartment, ventilation is usually turned off. The storage of large amounts of pellets in a closed compartment on a ship is similar to the risk in a pellet silo and the same safety measures should be taken (see chapter 7).Trucks are a used to transport small amount of pellets (up to 40 tons) to small scale customers. Pellets are loaded either as bulk or in bags. Bulk trucks are sometimes equipped with vacuum pump systems that allow pumping of the pellets and thus a comfortable way to transfer the pellets to a storage compartment. Rail cars and containers are also used for transport if available

6.2 Unloading and internal handling

During receiving and internal operations, the risk of dust generation, ignition and explosion should be minimized. Special precautions should be taken to avoid increase of fines and wear during unloading and receiving pellets. The precautions generally should focus on avoiding over-heated or burning loads, spark detecting and fire extinction systems.

6.3 Conveying

Conveying shall be conducted with a minimum of wear and damage to the solid biofuel. Fuel pellets, in particular, are very sensitive to physical wear and shall be handled with care. Precautions shall be taken to avoid moisture uptake in pellets. Minimal length of belt conveyor line should be applied and many crossings and high drops should be avoided, which raise the content of fines in a batch of pellets.

7 STORAGE OF SOLID BIOFUELS

Due to seasonal fluctuations with periods of high demand (winter) and periods with moderate or low demand (summer months) pellet producers and intermediate traders need large storage space. Also consumers i.e. heat and power producers have a high demand for securing their energy supply and thus keep storage big enough to be able to deal with unforeseen bottlenecks and shortages of supply. Wood pellets are sensitive to moisture uptake and when exposed to rain they swell and lose their pellet structure. High moisture content also promotes microbiological decay and this can result in dangerous conditions such as self-heating and self-ignition. Wood pellets are therefore always stored indoors, either in flat

storages i.e. frames, storage halls or in silos. Indoor storage of biomass is a challenge with respect to self-heating of the biomass, dust formation and off-gassing of the biomass. A range of safety measures have to be taken to grant safety. Recent accidents have shown that improper handling of biomass can result in severe damages and risk for life and health of handling personnel.

7.1 Storage types

7.1.1 Silo

Silo storage is the most common way of storing pellets at power plants, pellet producers and harbors. Silos are consuming less space as storage halls and can be filled and emptied easily using screw conveyors. The size of the silo depends on its function. Large silos with several thousand cubic meter volumes are common as intermediate storage at harbors or at large scale pellet consumers. From there pellets are distributed to transport vessels, or feeding bins.

Large scale silos can be different in size and shape depending on the function and construction year. Typically older silos that have previously been used for agricultural products are high and have a small diameter. Newer silos that have been designed and built from wood pellets storage usually have a larger diameter compared to their height. In general there are two different types of pellet silos, silos with a tapered bottom and silos with a flat bottom.
Vertical silos with a tapered bottom can be emptied by gravity using a discharge tunnel and a conveyor. These type of silos are widely used to store agricultural products i.e. grains and are to some extend also used for pellet storage. Agricultural silos usually range from 50 to 10.000 m^3. Dark colors and corrugated metal should be avoided since they increase heat absorption and lower heat transfer. Vertical silos with a flat bottom are emptied using a circulating auger for center feed to a discharge tunnel. They require less space due to their flat bottom and are therefore cheaper to build. However do they require more maintenance and take longer time to empty.

7.1.2 Flat storage

Flat storage building i.e. A-frames, are used for bulk storage of pellets and are used for large storage of pellets in a range from 15.000 to 100.000 m^3. They are used at the pellet producer's site, for intermediate storage at harbors and at the end users i.e. power plant site. Pellets are conveyed into the building and dropped down onto the floor forming a pile and/or moved by front loaders onto a pile. Emptying of this kind of storage is made by front loaders either into a feed system for a boiler (power plant site) or onto trucks, vessels or rail cars for further transportation. Especially moving pellets with a front loader bears the risk for fines and dust formation and as such a risk for health and dust explosion.

7.2 Self-heating and ignition risk

Fires in wood pellet silos due to self-heating are not uncommon and several incidents have been reported during the last years. Also dust explosion incidents have been reported from several plants and facilities handling wood pellets. Fires and explosions can occur along the whole supply chain of wood pellet production and delivery and can take place in the production plant, transport vessel, transfer facilities and at the consumer site. However fires and explosions are not known to be a problem in the bagged pellets marked [5].

The sources of ignition can either be externally from sparks generated by metal pieces or stones coming in contact with the biomass or by overheating of motors, conveyer belts, bearings due to high friction. An accumulation of dust and fines due to improper maintenance and cleaning can increase the risk of fires and dust explosions. Measure to reduce these risk are control measures to

remove impurities i.e. stones and metal from the biomass, spark and heat detectors along the transport conveyors, extinguishing systems and fixed control schemes for checking the state of the conveyor belts and bearings to prevent overheating and removal of dust and other debris. The utilization of antistatic and fire resistant material as well as proper grounding of the transport conveyors can reduce the risk of external ignition too.

Pellets in a closed storage environment can heat up due to microbiological and/or chemical reactions. The bulk mass act as insulation and therefore heat is usually built up deep inside the bulk. Microbiological decay requires moisture and it is therefore usually a problem occurring when the moisture content of the biomass is too high or in case of water (rain) coming in contact with the biomass. Microbial decay results in a temperature increase in the stored fuel and peak temperatures of microbial self-heating can be up to 80 °C depending on the type of microorganism [19]. Chemical degradation usually starts to have influence at about 40 °C and at temperatures above 50 °C chemical degradation reactions will exceed the biological ones [19]. Due to poor heat transfer within the bulk mass and the insulating properties of biomass, heat is accumulated inside the bulks that can result in self ignition. The main factors affecting the temperature in a pellet silo are the ambient temperature, moisture content, moisture gradients, size of the bulk and density.

7.3 Monitoring of temperature, off-gasses and moisture

Temperature in a pellet silo should be monitored continuously by sensors embedded in the stored product. An alternative and/or addition to direct temperature measurement can be equipment sensing carbon monoxide, hydrocarbons, radiated heat and smoke as precursors for overheating [5]. Even at low temperatures low temperature oxidation of pellets will result I the formation of carbon dioxide, carbon monoxide, aldehydes and methane and these gasses will deplete the oxygen in the silo. One option to cool and ventilate a pellet silo at the same time is to ventilate a storage silo whenever the ambient outside temperature is lower than the temperature inside the storage. In case of too high temperatures (> 80 °C) emergency procedures should be in place. This could be emergency discharge of the pellets by relocating them into a different storage or outside and thus breaking up the hotspots and cool the pellet bulk. In general the temperature in a pellet silo should be kept below 45 °C.

7.4 Safety measures for handling personnel

Gasses formed in a close pellet silo are a threat for the life of handling personnel and therefore measures should be taken to avoid contact with handling personnel. This can be done by ventilation systems, gas monitoring, warning signs and strict working procedures when opening and entering a pellet silo.

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Attachment I

EJSCREEN Report (Version 2018)

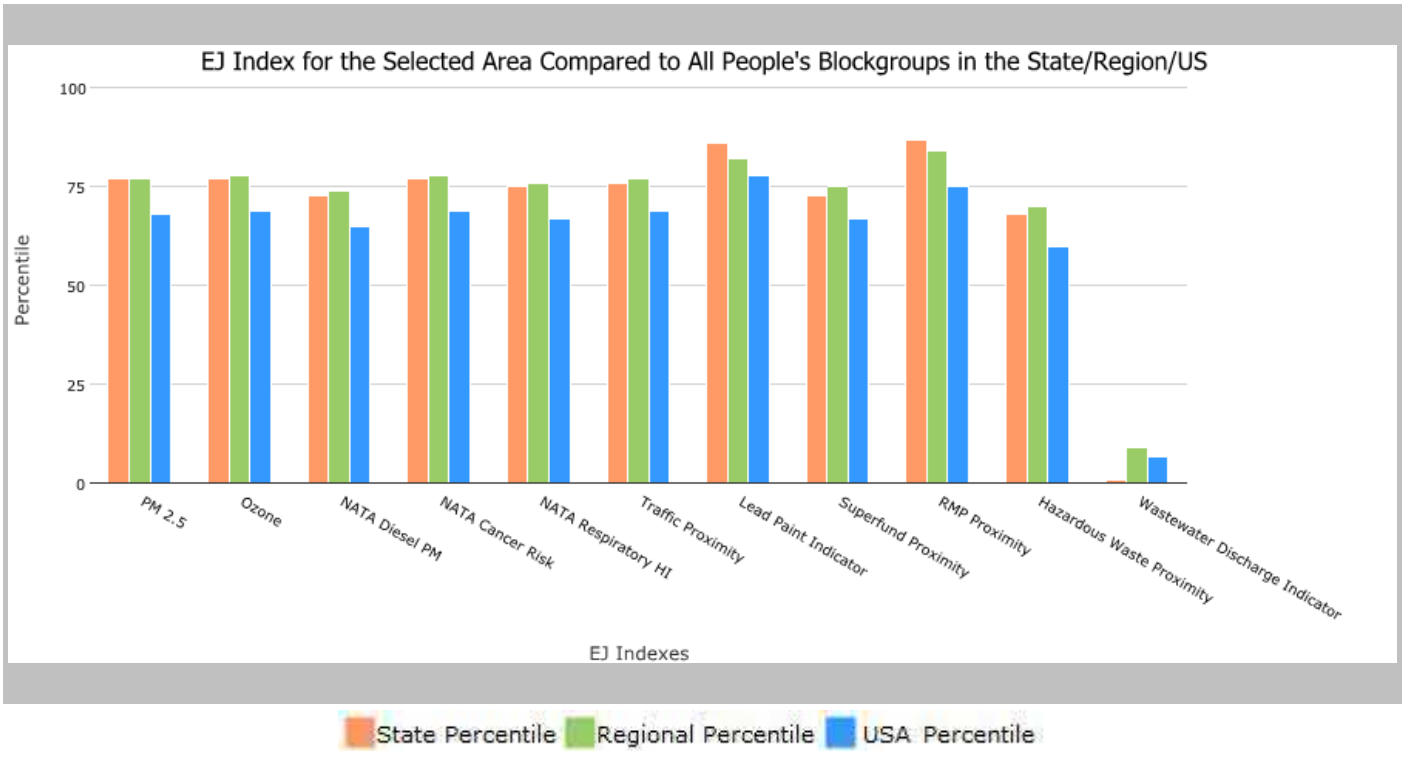
5 mile Ring around the Area, VIRGINIA, EPA Region 3

Approximate Population: 11,894

Input Area (sq. miles): 87.41

Enviva Southampton

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	77	77	68
EJ Index for Ozone	77	78	69
EJ Index for NATA* Diesel PM	73	74	65
EJ Index for NATA* Air Toxics Cancer Risk	77	78	69
EJ Index for NATA* Respiratory Hazard Index	75	76	67
EJ Index for Traffic Proximity and Volume	76	77	69
EJ Index for Lead Paint Indicator	86	82	78
EJ Index for Superfund Proximity	73	75	67
EJ Index for RMP Proximity	87	84	75
EJ Index for Hazardous Waste Proximity	68	70	60
EJ Index for Wastewater Discharge Indicator	1	9	7



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

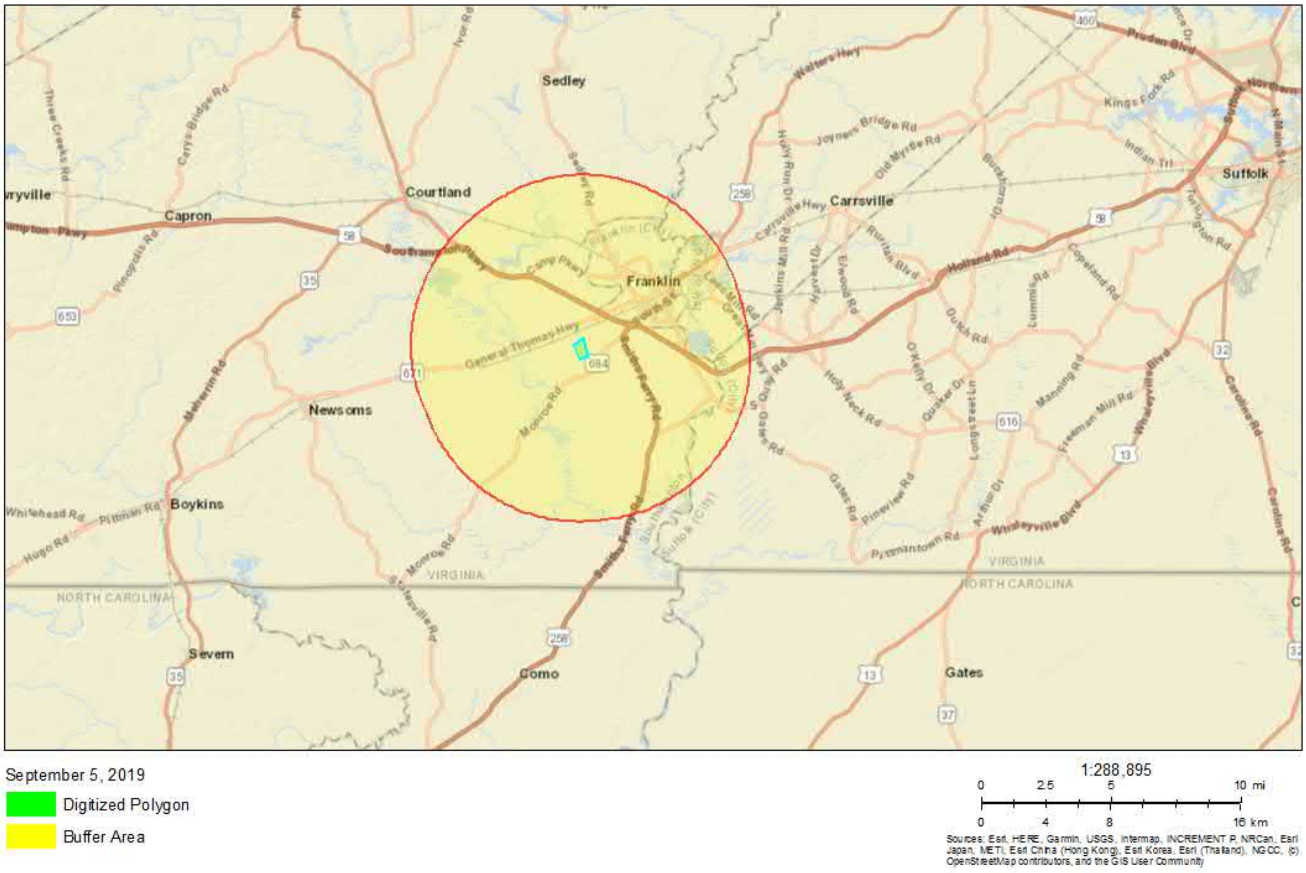
EJSCREEN Report (Version 2018)

5 mile Ring around the Area, VIRGINIA, EPA Region 3

Approximate Population: 11,894

Input Area (sq. miles): 87.41

Enviva Southampton



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	3

EJSCREEN Report (Version 2018)

5 mile Ring around the Area, VIRGINIA, EPA Region 3

Approximate Population: 11,894

Input Area (sq. miles): 87.41

Enviva Southampton

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	8.76	8.92	41	9.97	15	9.53	33
Ozone (ppb)	41.9	43.6	16	44.3	11	42.5	43
NATA* Diesel PM (µg/m^3)	0.302	0.77	12	0.921	<50th	0.938	<50th
NATA* Cancer Risk (lifetime risk per million)	38	42	39	42	<50th	40	<50th
NATA* Respiratory Hazard Index	1.2	1.8	24	1.8	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	44	430	41	360	40	600	38
Lead Paint Indicator (% Pre-1960 Housing)	0.26	0.21	70	0.36	48	0.29	58
Superfund Proximity (site count/km distance)	0.025	0.1	20	0.14	18	0.12	29
RMP Proximity (facility count/km distance)	0.4	0.37	74	0.6	61	0.72	55
Hazardous Waste Proximity (facility count/km distance)	0.17	0.67	47	1.3	30	4.3	33
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.16	2.7	98	100	91	30	91
Demographic Indicators							
Demographic Index	46%	32%	79	30%	79	36%	70
Minority Population	53%	37%	74	32%	76	38%	69
Low Income Population	39%	27%	74	28%	73	34%	63
Linguistically Isolated Population	0%	3%	52	2%	54	4%	44
Population With Less Than High School Education	17%	11%	76	11%	79	13%	72
Population Under 5 years of age	6%	6%	52	6%	56	6%	52
Population over 64 years of age	18%	14%	74	15%	69	14%	74

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

Attachment J

EJSCREEN Report (Version 2018)

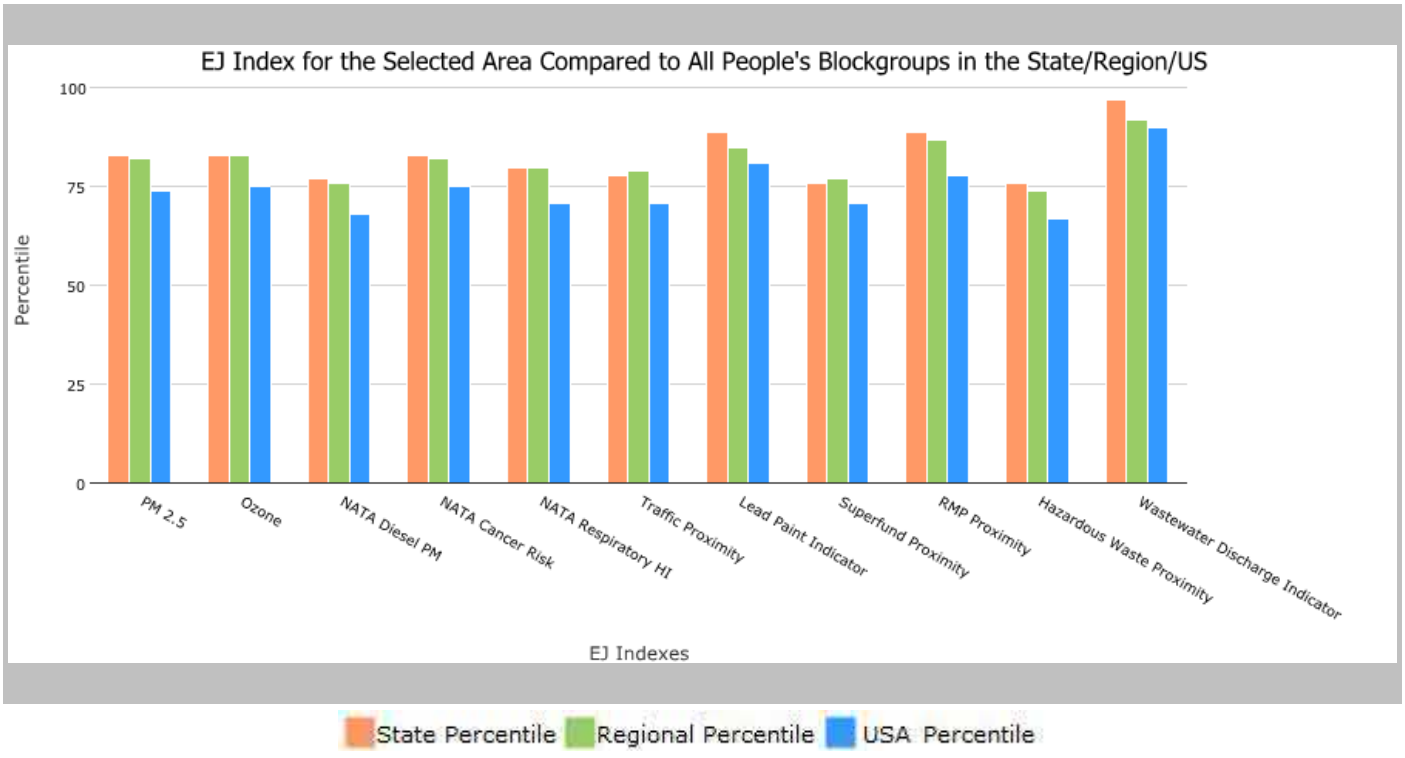
the User Specified Area, VIRGINIA, EPA Region 3

Approximate Population: 8,410

Input Area (sq. miles): 7.74

Franklin, Va.

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	83	82	74
EJ Index for Ozone	83	83	75
EJ Index for NATA* Diesel PM	77	76	68
EJ Index for NATA* Air Toxics Cancer Risk	83	82	75
EJ Index for NATA* Respiratory Hazard Index	80	80	71
EJ Index for Traffic Proximity and Volume	78	79	71
EJ Index for Lead Paint Indicator	89	85	81
EJ Index for Superfund Proximity	76	77	71
EJ Index for RMP Proximity	89	87	78
EJ Index for Hazardous Waste Proximity	76	74	67
EJ Index for Wastewater Discharge Indicator	97	92	90



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2018)

the User Specified Area, VIRGINIA, EPA Region 3

Approximate Population: 8,410

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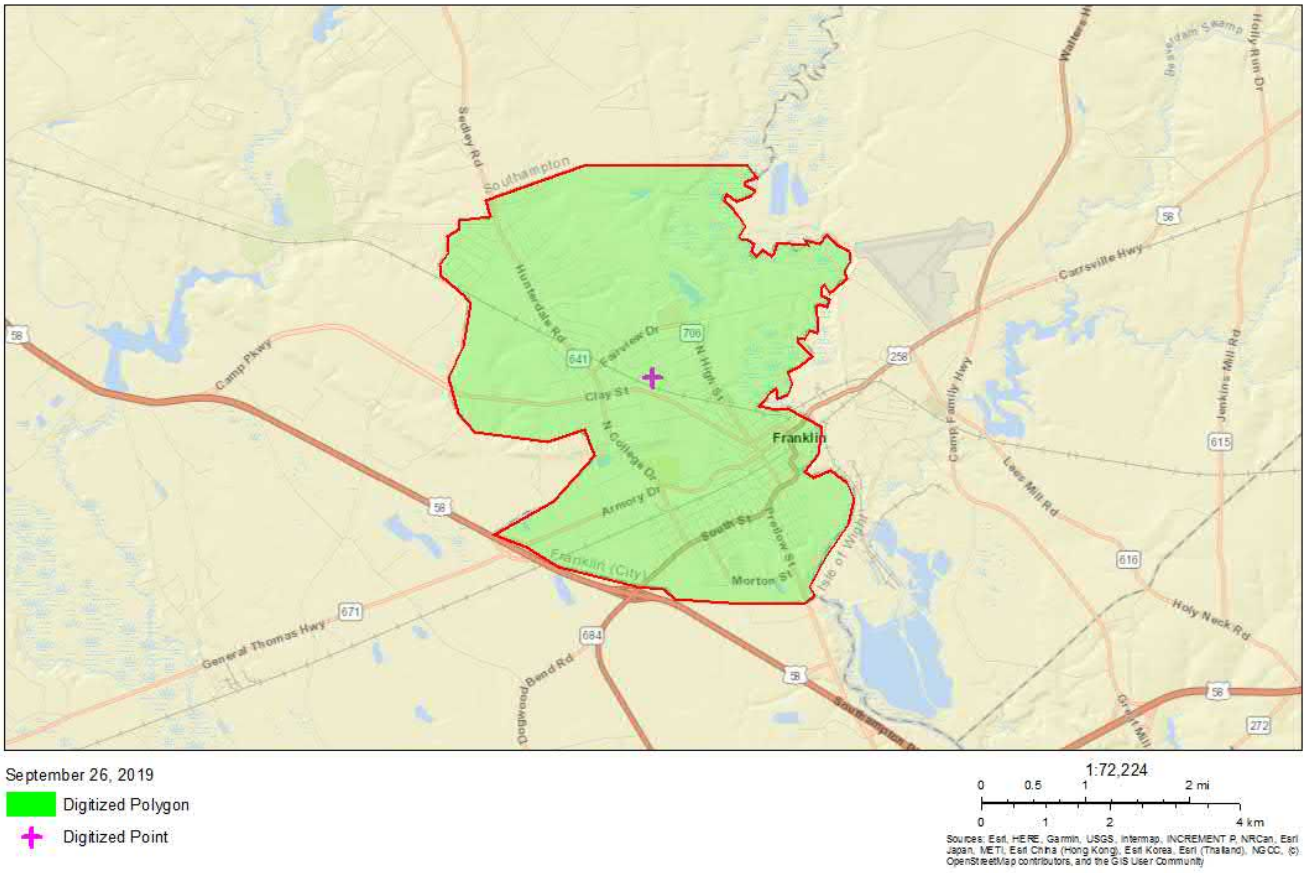
Franklin, Va.



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJSCREEN Report (Version 2018)

the User Specified Area, VIRGINIA, EPA Region 3

Approximate Population: 8,410

Input Area (sq. miles): 7.74

Franklin, Va.

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
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Particulate Matter (PM 2.5 in µg/m^3)	8.76	8.92	41	9.97	14	9.53	33
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NATA* Cancer Risk (lifetime risk per million)	39	42	45	42	<50th	40	<50th
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Traffic Proximity and Volume (daily traffic count/distance to road)	48	430	43	360	42	600	40
Lead Paint Indicator (% Pre-1960 Housing)	0.29	0.21	73	0.36	51	0.29	61
Superfund Proximity (site count/km distance)	0.025	0.1	20	0.14	18	0.12	29
RMP Proximity (facility count/km distance)	0.48	0.37	77	0.6	65	0.72	59
Hazardous Waste Proximity (facility count/km distance)	0.11	0.67	38	1.3	22	4.3	26
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.0062	2.7	93	100	75	30	78
Demographic Indicators							
Demographic Index	53%	32%	85	30%	84	36%	76
Minority Population	62%	37%	81	32%	81	38%	75
Low Income Population	44%	27%	80	28%	79	34%	70
Linguistically Isolated Population	0%	3%	52	2%	55	4%	44
Population With Less Than High School Education	19%	11%	80	11%	82	13%	75
Population Under 5 years of age	7%	6%	58	6%	62	6%	57
Population over 64 years of age	18%	14%	72	15%	67	14%	72

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

Attachment K

Enviva Southampton Permit – DEQ Public Outreach Summary

Information meeting

DEQ held an information meeting (not required by regulation) prior to starting the required public comment period. The meeting included a 40-minute presentation followed by a 90-minute Q&A session.

Outreach

1. **DEQ conducted outreach to inform the public regarding this meeting.**

- The public meeting notice was placed in the *The Tidewater News*, which serves Franklin, Southampton County and Isle of Wight County.
- Staff collected local contacts using a number of methods, including querying facilities using the U.S. Environmental Protection Agency's EJSCREEN tool. Roughly 196 contacts were organized in a spreadsheet. These contacts include citizens who have registered on DEQ's air permit mailing list, as well as the contacts collected through EJSCREEN and local churches, schools, government, tribal, and nonprofit organizations.
- The public notice for the information meeting was edited for lay audiences and emailed via Constant Contact to 151 email addresses (the subset of the 196 contacts for which DEQ located email addresses) and re-sent to those who hadn't opened the first email. 63 recipients opened the email, for an open rate of 44 percent. Over three quarters of recipients opened it on a desktop computer. From the email a total of nine recipients clicked on a link to the public notice.
- DEQ's Tidewater Regional Director and the Air Permitting Manager called local leaders (13 recipients) to ensure awareness of the information meeting and proposed permit action.
- The public notice for the information meeting and a flyer were mailed to approximately 45 addresses (the subset of the 196 contacts for which DEQ had mailing addresses but no email addresses).
- An infographic with key meeting details was created and shared as a "boosted" post on Facebook. The ad targeted the demographic of adult residents living within 30 miles of the proposed permit area. The post was viewed by 527 users living within 30 miles of the facility, and an additional 573 users outside the area.
- The same infographic (including a link to the public notice) was tweeted and was viewed by 646 people.
- The informational meeting was added to the community events calendars for local radio stations WLQM (101.7 FM, country) and WJZU (99.1 FM and 1250 AM, both gospel). The radio stations announced the meeting on air multiple times per day.

Public comment period and public hearing

DEQ is in the process of conducting the required 45-day public comment period and public hearing. DEQ also scheduled an additional 30-minute public briefing immediately before the public hearing.

Outreach

DEQ conducted outreach to inform the public regarding the public comment period/briefing/hearing.

- The public comment period/briefing/hearing notice was placed in *The Tidewater News*.
- The notice for the comment period/briefing/hearing was reformatted and emailed via Constant Contact to the same email addresses described above, including those who received the first email, but hadn't opened it. This resulted in an open rate of 43 percent (Constant Contact reports that the average open rate for emails is 23 percent). Over three quarters of recipients opened it on a desktop computer.
- The notice for the comment period/briefing/hearing and a flyer were mailed to the same addresses described above.
- An infographic with key public comment/hearing/briefing details was created and shared on Facebook, and was viewed by 187 people.
- The same graphic (with link to the public notice) was Tweeted and was viewed by 647 people.

Attachment L

EJSCREEN Report (Version 2018)

5 mile Ring around the Area, VIRGINIA, EPA Region 3

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Input Area (sq. miles): 87.41

Enviva Southampton

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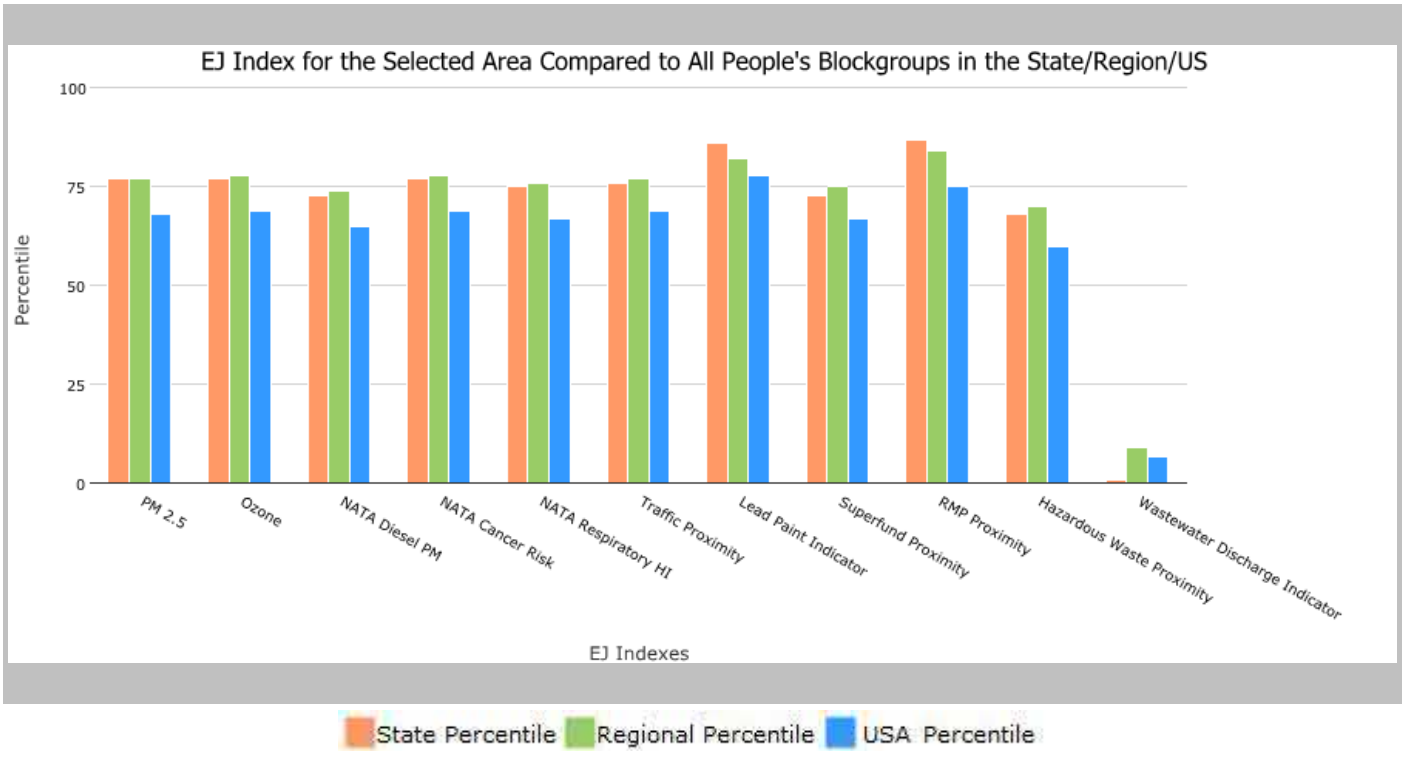
EJ Index for NATA* Respiratory Hazard Index	75	76	67
EJ Index for Traffic Proximity and Volume	76	77	69
EJ Index for Lead Paint Indicator	86	82	78
EJ Index for Superfund Proximity	73	75	67
EJ Index for RMP Proximity	87	84	75
EJ Index for Hazardous Waste Proximity	68	70	60
EJ Index for Wastewater Discharge Indicator	1	9	7



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

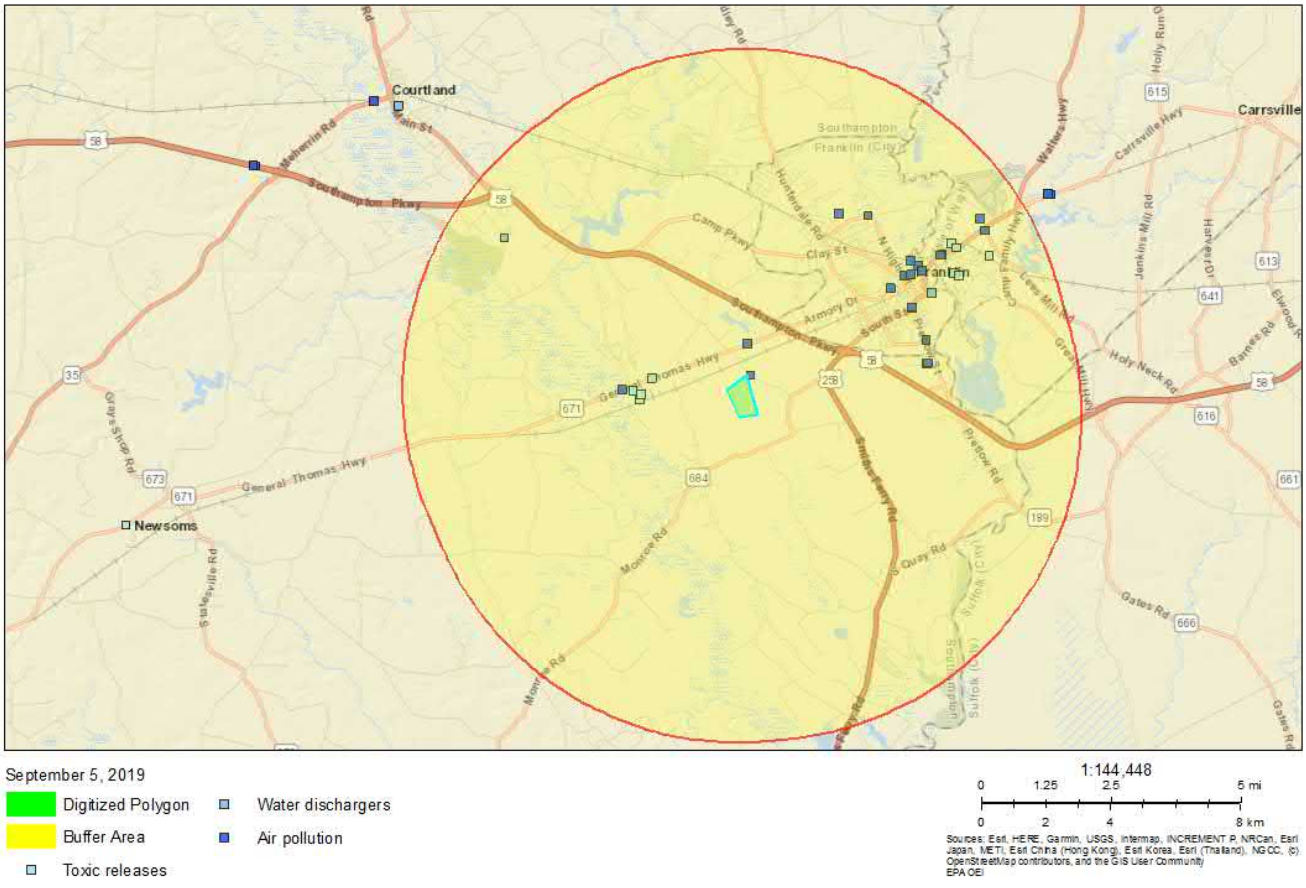
EJSCREEN Report (Version 2018)

5 mile Ring around the Area, VIRGINIA, EPA Region 3

Approximate Population: 11,894

Input Area (sq. miles): 87.41

Enviva Southampton



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	3

EJSCREEN Report (Version 2018)

5 mile Ring around the Area, VIRGINIA, EPA Region 3

Approximate Population: 11,894

Input Area (sq. miles): 87.41

Enviva Southampton

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	8.76	8.92	41	9.97	15	9.53	33
Ozone (ppb)	41.9	43.6	16	44.3	11	42.5	43
NATA* Diesel PM (µg/m^3)	0.302	0.77	12	0.921	<50th	0.938	<50th
NATA* Cancer Risk (lifetime risk per million)	38	42	39	42	<50th	40	<50th
NATA* Respiratory Hazard Index	1.2	1.8	24	1.8	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	44	430	41	360	40	600	38
Lead Paint Indicator (% Pre-1960 Housing)	0.26	0.21	70	0.36	48	0.29	58
Superfund Proximity (site count/km distance)	0.025	0.1	20	0.14	18	0.12	29
RMP Proximity (facility count/km distance)	0.4	0.37	74	0.6	61	0.72	55
Hazardous Waste Proximity (facility count/km distance)	0.17	0.67	47	1.3	30	4.3	33
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.16	2.7	98	100	91	30	91
Demographic Indicators							
Demographic Index	46%	32%	79	30%	79	36%	70
Minority Population	53%	37%	74	32%	76	38%	69
Low Income Population	39%	27%	74	28%	73	34%	63
Linguistically Isolated Population	0%	3%	52	2%	54	4%	44
Population With Less Than High School Education	17%	11%	76	11%	79	13%	72
Population Under 5 years of age	6%	6%	52	6%	56	6%	52
Population over 64 years of age	18%	14%	74	15%	69	14%	74

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

Archived: Monday, October 28, 2019 11:17:16 AM
From: Suzanne Keller
Sent: Friday, September 27, 2019 1:27:40 PM
To: JAMES.WHITE@deq.virginia.gov
Subject: Enviva Air Permit
Importance: Normal

James White
VA Department of Environmental Quality
Tidewater Regional Office
5636 Southern Blvd.
Virginia Beach, VA 23462

Re: Enviva Pellets Southampton, Registration Number 61653

Dear Mr. White:

I write today to request that the DEQ submit the Enviva air permit 61653 to the Air Board for review. Given the Air Board's deep concerns about public engagement and environmental justice, the request by Enviva to increase air pollution in the EJ communities of Franklin and Southhampton county deserve greater scrutiny.

First, at the public comment meeting held in Franklin, Virginia there were no citizens of the town or county who spoke against the expansion of the plant. This is concerning, were they informed about the expansion, did they have adequate information to assess the impact of the expansion? Given the dependence of this town on Enviva for jobs and the infiltration of the company in the community, DEQ needs to find ways to make it possible for citizens who have concerns to obtain more information and to voice concerns.

I bring to your attention, the association of particulate matter 2.5 with adverse birth outcomes. There is a growing body of epidemiological studies that implicate particulate matter 2.5 in preterm and low birth weight babies. The permit envisions a reduction of particulate matter 2.5, but it does not address the rates of preterm and low birth weight babies that already exist in that community. The determining factor in greater risk for adverse birth outcomes due to exposure to air pollution is proximity to the source. The DEQ air modeling reassures us that the NAAQS will not be violated, but is silent on the potential actual exposures of these pollutants on the population. While the NAAQS reduce risk, they don't eliminate risk, especially for pregnant women and other vulnerable populations closest to the facility.

Lastly, I urge the DEQ/AIR Board to deny the expansion of the facility, but require the additional pollution controls proposed in the draft permit. Given the urgency of the climate crisis, it is simply unacceptable to allow the expansion of the facility that will result in loss of forests in Virginia to produce a product that will be burned, producing even more air pollution.

I appreciate the opportunity to comment on this permit.

best regards,
Suzanne J. Keller
3014 Landria Drive
Richmond, Virginia 23225
804-266-4313